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Table of Contents.

[The Whole of the Literary Matter in THE MEDICAL JOURNAL OF AUSTRALIA is Copyright.]

ORIGINAL ARTICLES—	Page.	
Centenaries in 1942, by Harvey Sutton	21	
Some Common Helminths of Man, by P. A. Maplestone, D.S.O., D.Sc., M.B., B.S., D.T.M.	25	
REPORTS OF CASES—		
A Case of Phenothiazine Poisoning in Sydney, by L. I. H. Grant, M.B., B.S., B.Sc.	27	
Isolation Against Blood Factor N, by E. Singer	29	
REVIEWS—		
The Origin of Syphilis	29	
Regional Analgesia	30	
LEADING ARTICLES—		
Nutrition in Pregnancy	31	
CURRENT COMMENT—		
The Results of Treatment in Bronchial Asthma	33	
Labour in Young and Old Primiparæ	33	
ABSTRACTS FROM MEDICAL LITERATURE—		
Physiology	34	
Biological Chemistry	35	
MEDICAL SOCIETIES—		
The Medical Sciences Club of South Australia	36	
MEDICAL PRACTICE—		
Medical Certification	36	
CORRESPONDENCE—		
Hookworm Disease	37	
The Treatment of Angina Pectoris by Testosterone Propionate	37	
A Case of Foetal Ascites	37	
"Give Us This Day Our Daily Bread"	38	
An Unusual Death	38	
Rehabilitation after the War	38	
The Partially Sighted and War Work	38	
The Prophylaxis of Acute Recurrent Rheumatism	38	
A Notable Advance	38	
The National Health and Medical Research Council	39	
NAVAL, MILITARY AND AIR FORCE—		
Appointments	39	
Casualties	39	
AUSTRALIAN MEDICAL BOARD PROCEEDINGS—		
Queensland	40	
NOMINATIONS AND ELECTIONS—		
NOTICE	40	
MEDICAL APPOINTMENTS—		
BOOKS RECEIVED	40	
DIARY FOR THE MONTH		40
MEDICAL APPOINTMENTS: IMPORTANT NOTICE		40
EDITORIAL NOTICES		40

SUPPLEMENT NUMBER 19 ON WAR MEDICINE AND SURGERY:

Antisepsis and Disinfection.

CENTENARIES IN 1942.

By HARVEY SUTTON,
Sydney.

PART II.¹

Bicentenaries.
Births in 1742.

Samuel Bard (1742-1821) wrote an excellent essay on diphtheria or "angina suffocativa" (1771). He also wrote on the ethics of medicine (1769).

Francis Green (1742-1809), of Boston, published a treatise "Vox oculis subjecta" (1783) and supported the education of the deaf.

Antoine Portal (1742-1832) wrote a ponderous history of anatomy and surgery (1770-1773) and an anatomy in five volumes (1803). He was interested in orthopaedics, then in its infancy, and used spinal braces in the spinal deformity described by Pott in 1779. Among other marathon performances he lectured for sixty-four years at the *Collège de France* and for fifty-five years at the *Jardin du Roi*.

August Gottlieb Richter (1742-1812), a leading German surgeon, described the hernia named after him (1777-1779) in a treatise on the subject, a work of first-class importance. His "History of Surgery" (1782-1804) was left incomplete. He edited an important journal, *Chirurgische Bibliothek* (1771-1796), and was one of the first to teach surgery on sound lines (Göttingen, 1766).

Eduard Sandifort (1742-1814), anatomist, published an excellent atlas on anatomy of the duodenum and another of skulls in the Leyden Museum of Anatomy. He also described the pseudoosteomalacic rhachitic type of pelvis.

Carl Wilhelm Scheele (1742-1786), apothecary and chemist, of Stralsund, Sweden, an outstanding investigator, isolated a great variety of new compounds, especially acids—hydrocyanic, oxalic, tartaric, citric, gallic, lactic, benzoic *et cetera*. He extracted uric acid from urine and lactose from milk. He worked out the arsenic compounds and first made Scheele's green¹ and Prussian blue.

Among the births in 1742 was that of Anne Hunter (*née* Home, 1742-1821), wife of the great John Hunter, a figure of note in society and a poetess of some distinction. Her ballad "My Mother Bids me Bind my Hair" was set to music by Franz Joseph Haydn, while she wrote the words for "The Creation", probably Haydn's best known composition. She had four children, two of whom died young. The two who grew up were Captain John Banks Hunter, who, we are told, had red hair like his father, and Anne Lady Campbell. Neither had any issue. The Hunterian line continued through Dorothea (Mrs. Baillie), the sister of William and John.

Anne Hunter's epitaph to her husband, John Hunter, is a noble tribute. It was written for the memorial tablet set up at Saint Martin's-in-the-Fields, where his body was buried and before it was later transferred to Westminster Abbey.

Here rests in awful silence, cold and still,
One whom no common sparks of genius fired,
Whose reach of thought Nature alone could fill,
Whose deep research the love of truth inspired.
Hunter! if years of toil and watchful care,
If the vast labours of a powerful mind
To soothe the ills humanity must share
Deserve the grateful plaudits of mankind,
Then be each human weakness buried here
Envy would raise to dim a name so bright;
Those specks which in the orb of day appear
Take nothing from his warm and welcome light.

¹ Scheele's green was at one time thought an attractive colour for wall paints, but because of its poisonous associations it had to be given up.

Deaths in 1742.

Nicholas André (1658-1742) was the first to describe infraorbital neuralgia and to use the term "orthopedics" in a treatise of 1741.

James Douglas (1675-1742), born in Scotland, gained his degree of doctor of medicine at Rheims and practised in London; he was elected a Fellow of the College of Physicians in 1721. He wrote a description of the peritoneum (London, 1730) which first described the fold and pouch which goes by his name—the cul-de-sac of Douglas, now called by the anatomy books the retrovesical or retrouterine pouch or excavation. He was a practised anatomist and comparative anatomist. In 1707 appeared his "*Myographic comparata specimen*", in which the muscles of man and of the quadruped were studied, as well as the muscles peculiar to a woman. An account of the flamingo was published in 1716, and papers on morbid anatomy were read before the Royal Society. In 1715 he published a complete bibliography of anatomy from Hippocrates to Harvey. Although the conditions were not then named, he gave in his clinical reports the first description of amyloid degeneration of the spleen and of the murmur of aortic regurgitation. It was in regard to the high operation for stone of the bladder, which his surgeon brother John practised, and also in regard to tapping for dropsy (which Dr. Mead had reintroduced) that Douglas came to study in detail the peritoneal relations of the abdominal organs.

Where the peritoneum leaves the foreside of the rectum it makes an angle and changes its course upwards and forwards over the bladder; and a little above this angle there is a remarkable transverse stricture or semiloval fold of the peritoneum which I have constantly observed for many years past especially in women.

This looks like the utero-sacral fold and ligament of Mackenrodt.

He made complete preparations of the peritoneum with attached organs and of every surgical method of opening the bladder, concerning which he wrote a "History of the Lateral Operation for the Stone". To his credit is the exposure of the impostor Mary Tofts, who professed to give birth to rabbits. He did valuable work in botany, including a detailed study of the coffee plant and the story of the introduction of coffee into England as a beverage in the time of Charles I. His library of classical authors drew from Pope the following couplet in "The Dunciad":

There all the learn'd shall at the labour stand
And Douglas lend his soft obstetric hand.
William Hunter, brother of John, was his most famous pupil.

Thomas Dover (1660-1742), of Warwickshire, began practice in Bristol in 1684. When he was forty-eight years of age he joined in a privateering expedition as second in command and captain of one of the two vessels. The medical duties were in the hands of four surgeons. Captain Woodes Rogers was the leader, and his pilot William Dampier had been the first Englishman to see Australia (Western Australia). Dover, after a three years' voyage, returned in 1711 with much treasure in a Spanish prize, a frigate of 21 guns. The expedition realized £170,000. Its success gave rise to the South Sea Company.

Two striking incidents marked the voyage. They picked up, in February, 1710, Alexander Selkirk, a sailor marooned on the island of Juan Fernandez. Selkirk's experiences suggested the story of Robinson Crusoe to Daniel Defoe. Again, at the sack of Guayaquil in Peru, the sailors slept in the church where plague corpses had recently been buried. On returning to their ships 180 men went down with plague. Dover ordered bleeding from both arms, about 100 ounces being taken from each man, and gave them dilute sulphuric acid to drink; only eight died!

In 1721 Dover established himself (as a licentiate of the College of Physicians) in London, where he lived for most of the rest of his life. He saw his patients daily at the Jerusalem Coffee-house. His diaphoretic powder, now composed of opium, ipecacuanha and potassium sulphate, first appeared in the

"Ancient Physician's Legacy to His Country" (1732). The sixth edition was published in 1742. There the prescription is "an ounce each of Opium Ipecacuanha, together with Saltpetre and Tartar vitriolated four ounces each". It is only fair to say that most physicians of the time had secret formulæ of their own, and we hear of James's powder, Fowler's solution, Hoffmann's anodyne, and so on. It was the heyday of the apothecary, and at no time in our history did the faith in drugs become so credulous, so universal and so lucrative. Dover had great faith in metallic mercury as a remedy, and was called by some "the quicksilver doctor". Whether he invented the cure for severe constipation by the giving of a pound of mercury to act by its own weight is not recorded. He usually prescribed an ounce or an ounce and a quarter of crude mercury daily. One patient whom he put on a diet of "Asses milk, syrup of Snails and such stuff" took altogether one hundred and twenty pounds' weight of the metal.

In his writings Dover mentions interesting experiences he had when living in the house of Sydenham. Here he was treated for smallpox. First he was bled, 22 ounces of blood being taken, and then he was given an emetic. No fire was allowed in the room, the windows were kept constantly open and the bed clothes were laid no higher than his waist. Twelve bottles of small beer acidulated with spirit of vitriol were taken every twenty-four hours.

Though highly thought of on the continent by Tronchin (1762), Dover was not altogether *persona grata* amongst his professional brethren. Had he not warned people against the College of Physicians, "not to take every Graduate for a Physician nor a clan of prejudiced gentlemen for oracles", and upbraided the apothecaries for their "unwarrantable gains"? So it came about that his diaphoretic powder was neglected and might have passed into oblivion but for Joshua Ward, a public figure and popular but unqualified physician. He was exempted by name when in 1748 a bill to control unqualified practice came before Parliament. He was taken up by the King (George III) and actually asked the King that his tomb should be in Westminster Abbey in front of the altar or as near thereto as possible. This request was not acceded to; but his recipes were published after his death by Royal Command. He had many secret remedies. He dug out the formula for Dover's powder out of Dover's book and used it as *Pulvis sudeificus*, *Pulvis anodynus*, *Pulvis alexiterus*. Ward's balsam was what we know as friars' balsam. Pope summed him up thus:

Of late, without the least pretence to skill,
Ward's grown a famed physician by a pill.

Johann Sigmund Hahn (1664-1742), of Silesia, supported the use of the cold pack in fevers in "*Psychroluposia veterum renovata*" (1738).

Edmund Halley (1656-1742), Astronomer Royal, was interested in vital statistics. Halley named the comet of 1682 and predicted the return of the comet in 1758 without any disaster; he thus made many reexamine their attitude to infection and showed the futility of superstition. In 1693 he calculated the expectation of life at each age from a series of mortality tables. This laid the foundation of scientific life insurance and provided a valuable standard for health comparisons.

Friedrich Hoffmann (1660-1742), a physician, for forty-nine years professor at Halle, first described chlorosis in 1730 and was one of the first to describe rubella (1740). He was interested in mineral baths and springs, and discovered a mineral spring at Selditz in Bohemia containing magnesium and sodium sulphates; this gave the name to the quite different Seidlitz powders. Hoffmann's "*Medicus politicus*" (1738) dealt with medical ethics. He realized the close link between physiology and pathology. He seems to have considered spasm as the cause of acute disease, atony that of chronic illnesses. Changes in the humours and in the excretions also operated. Each of these he countered with sedatives, tonics, alteratives and evacuants respectively. Tonics are still a feature of ordinary practice and popular esteem. Alteratives are not heard of much today; they altered (changed for the better) some chronic process, though how they acted was quite unknown.

Potassium iodide was a famous alterative, whose benefits were chiefly experienced in tertiary syphilitic phenomena. He published the "Pharmacopœia Schroederi" in 1687, experimented on the volatile oils and evolved an elixir of orange, which was used as a carminative as "elixir viscerale", and the better known Hoffmann's anodyne, or as he called it, mineral anodyne liquor. It appears today as *Spiritus Etheris Compositus*, and contains one part of ether to eight of alcohol *et cetera*. Ether arose from the alchemist's use of the action of sulphuric acid on wine followed by distillation. This "dulcified spirit of vitriol" has been linked with Lully and Paracelsus.

George Cheyne (1670-1742), born in Scotland, must have been close to breaking the record within the medical profession for its heaviest member, since at one time he weighed 32 stone. He relates that his breath became so short that "upon stepping into my chariot quickly and with some effort, I was ready to faint away for want of breath". He therefore restricted his diet to "seeds, bread, mealy roots and milk". As his weight diminished, so he lost his boon companions—"they all dropped off like autumn leaves". He was admitted to the Royal Society for a treatise on fluxions. His best paper was "An Essay on Health and Long Life". In spite of his early obesity he lived to the age of seventy-three years.

Events of Importance in 1742.

Events of importance in 1742 include the following.

Carl von Linné (Linnaeus) (1707-1778), the father of botany, was like so many botanists also a physician. He had made his name with the "Systema Naturæ" (1735) dealing with plants, animals and minerals. He is the starting point for scientific nomenclature, the binomial type of which is his invention. He applied the same principle to human diseases (*Genera morborum*, 1763), and, as might be expected, wrote a *materia medica* in 1752. In 1742 he described aphasia, hemiparesis and embolism.

John Kearsley Mitchell (1798-1858), of Virginia, educated in Scotland, was a graduate of the University of Pennsylvania. He wrote an essay on yellow fever. The actual name "yellow fever" was given to the disease by Griffith Hughes in 1750. In 1849 Mitchell urged the parasitic origin of fevers, or as he put it, the cryptogamous origin of malarious and epidemic fevers.

Sir Fielding Ould (1710-1789), Master of the Rotunda, Dublin, in 1759, published his treatise on midwifery in 1742. He was familiar with episiotomy, the use of forceps and version. On the occasion of his knighthood (1760) the following verse appeared:

Sir Fielding Ould is made a knight.
He should have been a lord by right,
For then each lady's prayer would be,
O Lord, good Lord, deliver me.

Sir John Pringle (1707-1782), of Stichell House, Roxburghshire, born on April 10, 1707, the youngest son of a baronet, was educated at St. Andrews under the eye of his uncle, who was professor of Greek. He entered the University of Edinburgh in 1727, intending to take up a commercial life. In 1728, when visiting Leyden, he attended a lecture by Boerhaave and decided to study medicine. At Leyden he became friendly with Van Swieten, who in Vienna under Maria Theresa introduced clinical teaching at the bedside. In 1730 he graduated at Leyden, and after study in Paris began practice in Edinburgh. In March, 1734, he lectured on metaphysics and moral philosophy as joint professor of pneumatics (Greek *pneuma*, the soul or the breath of life), a word with a rather different meaning nowadays. He lectured on the immortality of the soul.

In 1742, as physician to the Earl of Stair, Commander-in-Chief of British Forces in Flanders, Pringle was in charge of the military hospital at a salary of twenty shillings a day. He may be regarded as originating the Red Cross idea, for Lord Stair and the French commander, the Duc de Noailles, agreed to regard hospitals as sanctuaries for the disabled and mutually protected. He was made surgeon-general of the British Army in 1742.

After the peace in 1748 he settled in London, where he rose to the top of the tree. He was made a Fellow of the Royal College of Physicians *speciali gratia* in 1763, created a baronet in 1766, appointed physician to the King in 1774, and made a Fellow and President of the Royal Society in 1772. Here he greatly encouraged research. During his presidency the Copley medal was awarded to Priestley for his work on gases and later to Captain (then Lieutenant) James Cook for his essay on the prevention of scurvy in his voyage round the world in the *Resolution* (1779-1782); during a voyage of just over three years in all climates between 52° north and 71° south latitude, Cook lost only one out of a crew of 118.

Pringle befriended Boswell, though he never met Johnson. He was greatly interested in religion and later in life became a Unitarian. He died in 1782 and is buried in St. James's, Piccadilly, a bust having been erected in Westminster Abbey. He presented by his will to the College of Physicians in Edinburgh his "Medical and Physical Observations" (ten volumes).

Pringle was interested in military medicine and sanitation and in the prevention of dysentery and hospital fever. He identified "jail" fever and hospital fever as typhus in 1750. His best known work, "Observations on the Diseases of the Army" (1752), enjoyed an international reputation. He is thus the founder of modern military medicine, as distinct from military surgery. His research "On Septic and Antiseptic Substances", which gained him the Copley medal, has a strangely modern sound.

Theodor Pyl, of Greifswald, recognized the presence of elastic fluid in the labyrinth of the ear and its relation to the transmission of sound.

Johann Peter Sussmilch (1707-1777), an army chaplain of Frederick the Great, wrote "The Divine Order" in 1742, which is a milestone in the study of vital statistics and their relation to hygiene, to insurance and to individual and national welfare. He insisted that the common weal was the common wealth, that a nation's greatness was founded on the welfare of her workers, and that human resources were the bases of prosperity. It is a great human document.

The Centigrade thermometer came into being in 1742. Newton, in 1701, had proposed a scale with the zero as the freezing point of water and the human body heat as 12°. Fahrenheit (1714) tried for the lowest temperature then attained, using a freezing mixture of ice and common salt, and he made finer gradations, taking the body temperature as 96° Fahrenheit. The constancy of the boiling point of water at constant pressure gave the second fixed point, as Halley and others had suggested. In 1742 the freezing point of water was found to be quite definite, and Anders Celsius, of Upsala (1701-1744), selected his zero and 100° as the freezing and boiling points of water respectively. The Fahrenheit scale suits weather work and still holds its own in British medicine. The Celsius or Centigrade scale is generally adopted in science.

Tercentenaries: 1642.

The year 1642 is notable for the occurrence of the death of Galileo and the birth of Newton. It was a year of war in England, with the outbreak of the great rebellion. William Harvey was made warden of Merton College, Oxford, and in his position as tutor to the royal princes he was present at the Battle of Edgehill, where a cannon-ball rudely disturbed their studies.

It is a year of interest to Australians, for in November, 1642, Tasman sighted the island (Tasmania) which he named, after his future father-in-law, "Van Diemen's Land".

Bontius (1598-1631), a Dutch physician in Java, first described beriberi and also wrote on tropical dysentery in his *De Medicina Indorum* (1642). He knew, too, the value of lemons in certain diseases.

Torricelli (1608-1647) invented the barometer in 1642, thanks in part to the ingenuity of Venetian glass-blowers.

Georg Wirsung (1600-1643), of Bavaria, prosector of Weiling, discovered the pancreatic duct when at Padua in

1642. The next year he was assassinated by a Belgian, and the story was that the quarrel was about the priority of this discovery.

Late in the year 1642 a manuscript of the "Religio Medici" was published without Sir Thomas Browne's permission, and this forced him to bring out the authorized first edition in 1643.

Galileo Galilei (1564-1642), scion of a noble house, born at Pisa, was a student of medicine. While attending a service in the cathedral at Pisa he watched the great candelabrum suspended from a high vault. The wind from the occasional opening of a door would set it swinging and then the swings would die down. Checking the time by counting his pulse beat, he became aware that however great or small the swing, the time taken was unchanged. Testing this with pendulums of different lengths, he found that the time taken could be shortened by shortening or increased by lengthening the pendulum. So was born the basis of the pendulum clock and its regulation. He invented, too, an instrument by which the length of a pendulum could be adjusted till it swung at the same rate as the pulse, rather like a metronome. Hence the rate of the pulse beat could be measured. Watches with the small hand did not come in till the eighteenth century.

Euclid so fascinated Galileo that he changed over to mathematics and was elected to the chair of mathematics at Pisa. Using a hundred-pound cannon-ball and a half-pound weight, he dropped the two weights together from a height (probably the Leaning Tower of Pisa). As the weights struck the ground at the same time, another blow was directed against the authority of Aristotle—a most unpopular proceeding; it led to his lectures being publicly hissed, and he had to give up the professorship. He was, however, in 1591, invited to Padua. Here he was under the protection of Venice, which opposed Roman dominance. In 1596 he invented a thermoscope, a bulb with inverted graduated tube dipped into fluid, the forerunner of the thermometer, and in 1597 he worked out his proportional compass.

Galileo found a new bright star in 1604, and by improving the telescope he found four moons round Jupiter; to the fury of his Aristotelian critics, who held that the heavens were immutable, he found spots on the sun and saw the rings of Saturn—a Copernican system in miniature.

Galileo's telescopes, many made by his own hands, were used all over Europe, and he improved the microscope.

In 1610 he went to Florence; but he had now come into range of his Roman enemies. He was led into a controversy in which he sought scriptural confirmation; his works were banned and he was admonished to keep silent in 1616. Later, however, he was received into full favour.

Meanwhile Kepler in Austria had found that the path of the planets must be an ellipse and that their varying speed followed the law of covering equal areas in equal times. Stimulated by Kepler's findings, Galileo in 1630 published a dialogue on the two systems, that of Ptolemy and that of Copernicus, which obviously was unfavourable to the orthodox Ptolemaic opinion. He was cited before the Inquisition and forced to recant in 1633. When Milton visited him in 1638 he was blind, but he remained mentally fully alert till his death on January 8, 1642.

Isaac Newton (1642-1727), our greatest scientific genius, was born at Woolsthorpe, a premature baby and the posthumous son of a Lincolnshire farmer. He was a most ingenious boy, making all sorts of mechanical devices. At the age of twelve years he went to live with an apothecary. He was far from industrious and stood very low in his class till a successful fight with another boy stirred him up to become the head boy of the school. He entered Trinity College, Cambridge, at the age of eighteen years, and under Barrow rapidly absorbed mathematical knowledge. At the age of twenty-seven years he succeeded Barrow in the chair of mathematics (1669).

In 1665-1666 the college had been closed because of plague and in the two years' interval Newton evolved fluxions (the calculus), though Leibnitz had already invented the

idea independently. It is by Voltaire, who got the story from Newton's favourite niece, that we are told how after watching an apple fall from a tree, and with a head full of Copernicus and Galileo, Newton gained in 1666 his conception of the law of universal gravitation acting not only on objects on the earth, but throughout space. The laws of motion were thus evolved. New estimates of the moon's distance were made, and Newton was able to prove his inverse square law. Edmund Halley managed to get him to publish his researches in "Principia Philosophiae" (1687).

Newton worked out the spectrum with the seven main colours that form white light. In 1672 he unveiled a reflecting telescope. His reflecting sextant is still in use at sea under the name of Halley's quadrant. He made suggestions for the thermometric scale. Later he became Master of the Mint (1697), and in 1703 President of the Royal Society. His work on optics came out in 1704. It is remarkable that his main interest was theology, especially the prophecies.

Earlier than 1642.

Earlier than 1642 the lack of detailed dates and the limited amount of investigation and of publication account for the few examples found.

In 1542 Andreas Vesalius of Brussels, anatomist of Padua, published an interesting study on the China root with its criticism of Galen, to be followed the next year by his masterpiece "De Fabrica Humani Corporis".

Leonard Fuchs (1501-1566), the famous botanist, published his great work "De Historia Stirpium" at Basel in 1542, magnificently illustrated. The fuchsia is named after him.

Robert Recorde wrote his "Arithmetic" in 1542.

In 1542 Henry VIII modified his act of 1511, which gave the College of Physicians the sole right to practise physic in London and for seven miles around. Apothecaries were now given greater scope. In the same year the act for the suppression of the monasteries profoundly affected many social agencies. Of the hospitals in London, only three survived—Saint Bart's, Saint Thomas's and Bedlam.

A curious fact of some significance today was the first visit of a European ship (Portuguese) to Japan in 1542.

One last date, a novicentenary, takes us back to Edward the Confessor (1042), to whom is attributed the introduction into England of the Royal Touch for the King's Evil. The King's Evil, *morbus regius* or scrofula, was a mixture of conditions. Most typical were tuberculous glands of the neck, often deficiency phenomena such as severe rickets and phlyctenular ulcer, while goitre and *spina ventosa* were included. The touchpiece after 1470 was the angel; it was worth 8s. 8d. to 10s. Shakespeare makes Malcolm and Macduff visit England and in a room of the King's palace see a crew of wretched souls that stay his cure. On their inquiring their disease the doctor tells them:

Tis called the evil:
A most miraculous work in this good king:
Which often since my here-remain in England,
I have seen him do. How he solicits Heaven,
Himself best knows, but strangely-visited people.
All swoln and ulcerous, pitiful to the eye,
The mere despair of surgery, he cures;
Hanging a golden stamp about their necks.
Put on with holy prayers: and 'tis spoken to the succeeding
royalty he leaves
The healing benediction.

Henry II revived the procedure, and so right on to Queen Anne the ceremony persisted, though neither Cromwell nor William III "touched", except on one special occasion when the latter told the recipient: "God give thee better health and more sense."

Dr. Johnson had a touchpiece given him by Queen Anne when he was a boy suffering from enlarged glands in the neck. The scars, however, remained with him for life.

Charles II "laid hands" on over 90,000 people in nineteen years. Sir Thomas Browne sent a patient to Breda to be

touched by him during his exile. Wiseman, his surgeon, related many cures. Finally, the Hanoverians refused to use the Royal privilege. It is one of the few forms of healing safeguarded by strict law. The French kings started the proceeding in the tenth century. They said to the patient: "The king touches thee, may God heal thee." Henri IV, as he swung his blade at the Battle of Ivry, used these familiar words.

SOME COMMON HELMINTHS OF MAN.¹

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It is my purpose tonight to confine my remarks chiefly to those worms which are found in the intestine, and of these to spend most of my time discussing the ones most likely to be encountered in Tasmania. In doing so I shall draw largely on my personal experience covering fifteen years in Calcutta, so if I appear to be dogmatic, it will be only because I am stating what I have myself found.

Enterobius Vermicularis.

The first worm that comes to mind in the above-mentioned category is *Enterobius vermicularis* (oxyuris or pinworm), because this troublesome parasite is found wherever man is found, its incidence is only slightly affected by sanitary measures, and it often occurs in persons, usually children, who are living under the best conditions, even with a water-borne sewerage system. Recent work in America has provided an answer to the question why this worm is able to surmount all sanitary barriers and to appear in the cleanest of homes. When the female emerges from the anus, usually at night, she deposits her eggs in a long trail behind her, and they are covered with a sticky material which enables them to adhere to anything with which they come in contact, fingers, bedclothes, pyjamas *et cetera*. They rapidly dry, and in the morning when the clothes are shaken, as they often are in bed-making, the eggs scatter all over the room and come to lie on any ledge, such as the tops of door and window frames. They were many times found in such places during special surveys in America, and I confirmed this in Calcutta. In the dry state the eggs are very light, and they can be blown about by air currents, so that they may leave their original resting places and fall on food or be directly inhaled from the air, and thus gain entrance to the intestine. The embryos in these dry eggs can remain viable for two or three days in cool, moist air.

When the eggs reach the duodenum they hatch and reach maturity in the small intestine, where impregnation of the female takes place. The worms then migrate to the caecum and the males probably die or continue their course down through the gut and are passed out in the stools; in any event, they are rarely seen, and they play no part in the production of symptoms. The females attach themselves by their mouths to the mucous membrane and remain quiescent while becoming gravid (eggs reaching maturity). When they arrive at this stage, their hold on the gut wall is loosened and they migrate, for the most part in a downward direction, in the large intestine and finally reach the anus, from which they emerge. From the time the eggs are swallowed to the emergence of worms and the deposit of more eggs, is a period of about two months.

Consideration of the foregoing facts in the life history of the parasite explains the following features in connexion with this infestation: (a) how the infestation is transmitted, irrespective of the sanitary surroundings; (b) why it is typically a family or institutional infection; (c) why it is difficult to effect a cure; (d) why one remains uncertain whether a cure has been made.

¹ Read at a meeting of the Tasmanian Branch of the British Medical Association on May 11, 1943, at Hobart.

First, let us consider the question of cure. On a superficial view this appears simple, because, in the normal course of events, the worms pass out of the anus, deposit their eggs and die, so that the tendency is to natural cure. But this rarely happens, and once established, an *enterobius* infection persists for a long time. The eggs, when deposited, contain embryos, and are thus ready to infect practically at once, unlike the eggs of other intestinal worms that need several days' exposure to the air before they reach maturity; moreover, a subject is constantly reinfecting himself by unconsciously conveying eggs on his fingers from his anal region to his mouth and nose. Washing the hands may not be enough to get rid of these eggs, as they often penetrate under the nails.

Next we shall consider diagnosis and establishment of cure. The presence of practically all intestinal worms is demonstrated by the finding of the characteristic eggs in the faeces, and as a corollary of this, it may be stated that the incidence and cure rate depend directly on the efficiency of the technique employed for finding the eggs. To put this in another way, if a poor method of finding eggs is used, it will result in the claiming of many more cures than if a more stringent test is applied. Another factor in this connexion is that, after any recognized treatment, it is probable that the number of eggs will always be much reduced and consequently harder to find. If we apply this to the question of *enterobius*, we shall see, in the first place, that eggs are not present in the stools under normal conditions, as they are deposited only after the worms have left the bowel; yet cures are often claimed on the absence of eggs from the stools. Special techniques have to be used, and several have been devised. The simplest of these is to scrape round the anal opening with a blunt wooden spatula, wash the collected material onto a slide and examine it under the microscope. A more efficient instrument is the anal swab, devised in America. This is a glass rod with a piece of "Cellophane", about two centimetres square, folded over one end and held in place by a small rubber band. The swab is lightly inserted into the anal opening and a circular movement is performed, the "Cellophane" is removed from the rod and flattened between slides for examination; the addition of a few drops of N/10 sodium hydroxide solution is an advantage, as it clears the preparation and renders the eggs more easily visible. In practice, these methods are rarely employed either for diagnosis or for test of cure, reliance generally being placed on absence of symptoms and possibly on the finding of the worms themselves.

The only symptom of importance is itching, which occurs mostly at night, so the basic trouble is really due to loss of sleep, and as children are the usual sufferers, this disturbance of rest often reacts on the parents. It is a more serious condition in females than in males, because the worms may invade the vulval region, with consequent extension of the pruritic area. In older people a cured *enterobius* infection often leaves behind it a chronic pruritus—a difficult condition to treat—and it is hard to convince such patients that the continued itching is not due to the continued presence of worms. In such cases several microscopic examinations are a necessity, and it must be remembered that a final decision cannot be given under about two months, as recurrence is possible up to that length of time.

The number of drugs that have been held to be cures of this condition is enormous, and this is evidence that none can be regarded as specific. The reason for such a number of unfounded claims is probably that sufficient trouble is not taken to establish the fact that a cure has been effected, and the free purgation that is the accompaniment of practically all anthelmintic treatments gets rid of numbers of worms and causes a cessation of symptoms, for the time at least. On this account I shall refer to only the two most recent drugs recommended as cures, because from what I can gather, adequate checks on their value have been made. I have not had personal experience in their use for treating pinworm infection.

The first is phenothiazine, a dye that was first used successfully in certain worm infections in domestic stock. It appears to be a useful drug in clearing out the pinworm,

but it has certain drawbacks. Large doses have to be given, and although it has not yet been used in a large number of cases, at least one fatality and several cases of severe haemolytic anaemia have been reported. On this account, I think the risks attendant on its use are unjustified in the treatment of what is after all a condition that is never fatal and rarely serious.

To digress for a moment: this is an aspect of the problem that always has to be borne in mind in treating any helminthic infection. Few of these infections are a serious menace to life, so consideration should always be given to the question how far one is justified in administering a poisonous drug for their cure. Unfortunately, in regard to practically all useful anthelmintics, the margin between the effective dose and the toxic dose is very narrow.

The other drug recently recommended is gentian violet. It is stated by its advocates that it may cause slight nausea, but that this is not a contraindication. I have not used this dye for treating *enterobius* infections, but I have had considerable experience with it in one or two other worm infections; and in regard to Indian patients, at all events, I cannot agree that the intestinal disturbance is always negligible, for on several occasions I have had to discontinue treatment because every dose was followed by severe vomiting, no matter what precautions were taken to prevent it. Therefore, if one uses gentian violet to any extent, one must expect, sooner or later, to encounter a case in which it cannot be used.

This leaves us in the position that we still have no certain cure for *enterobius* infection, which can be confidently used in every case; but the position is not hopeless, as I suggest it is possible to get rid of these worms without any specific drug.

If one recollects that the natural instinct of the female worm is to migrate out of the bowel, deposit her eggs and die, it is clear that cure should occur, provided reinfection can be prevented. Elimination of the worms can be hastened by regular free purgation, and this can be augmented by an enema every evening or two, before bedtime. This will remove the worms that are due to emerge that night, and will thus ensure a night free from the usual irritation. The quassia enema was an old and time-honoured so-called specific, and in more recent years a strong salt and water enema has similarly been hailed as a cure. I think an ordinary soap and water enema just as useful, for the intrinsic virtue in the enema is its removal of worms, and whether they are dead or alive is of little importance, if they are got rid of. Ammoniated mercury ointment (1%) should be smeared round the anus every night, as it limits the migration of the worms and kills them, thus lessening the pruritus, and the grease will also stop the eggs from becoming dry and thus prevent their being thrown off into the air. Scratching of the area should also be prevented; this is best done by using pyjamas without openings through which the hands can enter, and a further precaution to prevent contamination of the hands is a pair of cotton gloves, freshly boiled after being used for one night. Another method is to apply loose tubular splints to the elbows, thus preventing sufficient flexion to allow the hands to reach the anus; this is less irksome than the tying of the child's hands to the bed rails. Patient observance of some or all of the measures in this régime will often be followed by cure.

Ascaris lumbricoides and *Trichuris trichiura*.

The two other common intestinal round worms of world-wide distribution are *Ascaris lumbricoides* and *Trichuris trichiura* (the whip worm). These are, I think, not common in Australia, and the chances that their incidence will increase are becoming less as improved means of disposing of faecal matter are becoming more general. Infection is acquired by swallowing of the eggs, just as in the case of *enterobius*; but the eggs are passed intimately mixed with the faeces, so they do not become adherent to the skin and clothing, and another difference is that they need exposure to the air for ten days or more before the embryos are sufficiently developed to render them capable of infecting a new host. It is therefore obvious that where

disposal of faecal matter is good and access of flies or other insects is prevented, there is no chance that infection will be acquired. It is important, however, to remember that efficient conservancy is an essential proceeding in controlling these infections, and that disinfection of stools is no protection, because ascaris eggs resist strong chemicals and develop most satisfactorily in a 4% solution of formaldehyde, and they will also resist freezing.

Hookworms.

The two hookworms, *Ankylostoma duodenale* and *Necator americanus*, both of which are found in Northern Australia, are dependent on a continuous fairly high temperature, both day and night, and also on moist soil for the existence and growth of the larvae. In Tasmania the only places where suitable conditions are likely to exist are in mines, so it is improbable that hookworm will ever be encountered in ordinary practice in this island. But it should be borne in mind that a hookworm infection, once acquired, may remain for a good many years if not eliminated by treatment. The only exact observation on this point of which I know was made about nine years ago in Madras gaol; it was found that three ankylostome infections remained for 68, 78 and 81 months respectively, and one necator infection remained for 61 months, before being naturally eliminated. From this it is clear that, since numbers of our troops are likely to become infected in northern Australia and the Pacific Islands, we can expect to encounter cases for a long time after the war comes to an end. But except in the northern part of Australia, I do not think there is any danger that these carriers will give rise to local infections, and even in the north, for reasons into which I have not time to enter tonight, I do not think hookworm infection will ever become prevalent or that heavy infections are likely to occur, even if the population becomes much greater than it is at present.

Tapeworms.

Among the cestodes or tapeworms, the most important in Australia to human beings is *Echinococcus granulosus*, as its larval stage is the cause of hydatid disease in man. I do not propose to discuss this subject, because it is probable that you who have worked here are more familiar with it than I am.

The common tapeworm *Tenias saginata*, the larval stage of which is passed in cattle, is of interest because it is occasionally found in Australia, and you will all recollect the outbreak in Victoria six or seven years ago, when there was a sudden increase in the incidence of the worm in that State. A well-planned and efficiently carried out campaign resulted in the termination of the "epidemic" being almost as rapid as its beginning had been. This experience provides an excellent example of the ease with which a worm infection, in which there is strict host specificity, can be controlled in a civilized community living under fairly good sanitary conditions.

In my experience diagnosis of this infection is simple, because it is usually made by the patient himself, who comes with the complaint that he is passing segments of the worm at frequent intervals. With regard to this aspect of the condition, I have had several patients who complained that while they were sitting quietly at work or otherwise engaged, a chain of segments might escape from the anus and cause great discomfort by their active movements in the anal region, and at the same time cause fouling of the clothing, as a little faecal material was generally brought out with the worm. I have seen no reference to this in any writings on the subject, and although my own experience suggests that it is a fairly common occurrence, it may be that it happens only in hot climates, where the external temperature and that of the bowel are not so widely separated. Another interesting thing I have noticed with regard to *Tenias saginata* infection is the psychological effect it often has on the patient. The sense of shame and uncleanliness, with the accompanying desire for secrecy, is even greater than is usually found in a venereal disease. A tapeworm infection also becomes an obsession with many people, and they keep an exact record of the number of segments passed each day, even when it entails the enumeration of

hundreds. Tapeworms are fairly hard to dislodge completely, especially if the infestation is a recent one, and often after a treatment in which the whole worm has apparently been evacuated, there is a recurrence in two or three months' time. This fact, coupled with the morbid interest in his stools that the patient may exhibit, indicates that it is unwise to accept a patient's unsupported statement that he is passing segments. It is always wise to make him bring some segments for inspection before giving treatment, because when he is in this state of mind, any piece of undigested food material with the slightest resemblance to a tapeworm segment will be looked on as a piece of worm. Passage of a few segments can practically always be assured by the ordering of a saline purge.

The administration of *filix mas* or its active principles in some preparation or other is the standard treatment; but I have found it unreliable, and with regard to hot climates I shall go further and say that I have found it useless; apparently it undergoes rapid deterioration in the heat. The two chloroform derivatives, carbon tetrachloride and tetrachlorethylene, so successfully used in hookworm treatment, are good. The latter is preferable, as it is much less toxic than carbon tetrachloride, which is particularly dangerous in association with alcohol, even in moderate amounts.

Cure can be established only by the finding of the head of the worm immediately after treatment. One should also examine the chains of segments and make sure that parts of not more than one worm are present. I have seen seven worms in one man, but multiple infections are not common. The finding of the head is a tedious process and also difficult for anyone not accustomed to it and without the necessary laboratory equipment. A further difficulty is that failure to find the head does not mean that it has not been dislodged. I recollect an instance in which I recovered a head passed only five hours after treatment had been given; it was almost unrecognizable even under the microscope, and with a little more delay in its evacuation it would not have been possible to say what it was. I therefore think that in dealing with these cases, if the head is not found, it is the soundest practice to explain the position to the patient, rather than to treat him again at once on the assumption he is not cured. Advise him to watch his stools at the end of about two months, and if at the end of three months segments have not reappeared, he can consider himself cured. He is less likely to be dissatisfied with this course of action than he would be if he had been given a second treatment shortly after the first and then began again to pass segments.

Taenia solium, of which the pig is the only known intermediate host, is much rarer than *Taenia saginata*. This is fortunate, because it may give rise to much more serious illness. The eggs of this worm occasionally have the faculty of hatching in the bowel of the human host, and the embryos enter the systemic circulation, just as they do in the pig. They may be found encysted anywhere, subcutaneously or in the muscles, for example, and it is now known that they fairly often encyst in the brain, in which case they give rise to a form of epilepsy which is invariably fatal. Up to the present all attempts to cure these patients have failed. Another difference from *Taenia saginata*, which I have not observed myself, but which I have good authority for stating, is that for months at a time all the segments may disintegrate in the gut, so that there is no macroscopic evidence in the stools that the infestation is present; this makes it compulsory to carry out microscopic examinations of the stools for eggs before one can be sure that a treatment has not failed. The eggs of these two tapeworms are indistinguishable, although nearly all books describe differences; but if segments are available differentiation is simple, as the number of transverse uterine branches is easily counted with a hand lens (in *Taenia solium* there are never more than 12 and in *Taenia saginata* there are never less than 18).

The dwarf tapeworm *Hymenolepis nana* is widely distributed throughout the world, but on the whole it is confined to warm climates; it is also a parasite of rats and mice. As far as I know, in Australia it is confined to north Queensland, where it was first recorded in 1918 during the

Rockefeller Foundation hookworm survey, and at the same time it was mentioned in the annual reports of the Australian Institute of Tropical Medicine at Townsville (1918, 1919 and 1920), where it was found in a State orphanage, the incidence being as high as 18% of 72 inmates. Like *enterobius*, it is typically a family or institutional infection, because, unlike all other tapeworms with which we are concerned, infection is acquired directly by swallowing the eggs. A further unusual character is that autoinfection is the rule; the eggs from the adult worms, already established in the gut, hatch, and the embryos penetrate to the submucous layer, where they undergo development; they then reenter the gut lumen and reach maturity. Thus infestation by a single worm may eventually lead to the presence of hundreds or even thousands, and the infestation is indefinitely prolonged; for the same reason eradication is a tedious and difficult matter.

Trematodes.

Trematodes or flukes are not found in man in Australia, except as importations by persons infected elsewhere. After the South African war a few of our troops, and after the 1914-1918 war a great many more, became infested with *Schistosoma haematobium* and *Schistosoma mansoni*, and the fact that these worms have never become established here since then indicates that such infection is unlikely to occur on subsequent similar occasions such as the present war. The fluke infections to which man is subject are on the whole limited in their distribution, because the parasites have a complicated life history, and with the exception of the schistosomes, they require two intermediate hosts, firstly a snail and secondly a fish or crustacean. The embryos show a high degree of specificity for both the snails and the fish they can successfully inhabit, so if the suitable species of these animals are not present in a country, the propagation of the particular fluke is not possible. A further limitation to their spread is the fact that human infestation often depends on certain special dietary habits, such as the eating of raw pickled fish or crabs. It is quite likely that infections with some of these worms will be picked up by our prisoners in Japanese hands; but for the foregoing reasons their return to Australia carrying these worms will not be a menace to the inhabitants. The flukes I have in mind are *Schistosoma japonicum*, *Paragonimus westermani*, *Clonorchis sinensis* and certain members of the family Heterophyidae.

Reports of Cases.

A CASE OF PHENOTHIAZINE POISONING IN SYDNEY.

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of Sydney.

I SHOULD like to call attention to the serious danger associated with the use of phenothiazine in the treatment of threadworm infestation. This drug (thiodiphenylamine) is an attractive one to the practitioner in intractable cases of infestation, as its results in such cases are much more successful than the orthodox methods. It has the added advantage of not requiring the use of purges or restricted diet. Manson-Bahr,⁽¹⁾ in 1940, led the way by reporting a convincing series of nine cases in which treatment was successful and free from any ill effects. At various times recommendations for this drug have appeared in the most reliable publications, including one in *The Practitioner*⁽²⁾ of October, 1941; in this it was stated that phenothiazine is "virtually non-toxic". However, an alarm was called by R. D. C. Johnstone,⁽³⁾ of London, in 1942. In an article entitled "Acute Haemolytic Anæmia following Phenothiazine Therapy" he brought forward abundant evidence to show that this drug is in a high percentage of cases toxic. Practically nothing has been written upon this subject in Australia; but the occurrence of a case of acute haemolytic anæmia so caused and requiring the patient's admission to the Royal North Shore Hospital calls for its dangers to be thoroughly known.

Clinical Record.

On September 17, 1942, a girl, aged seven and a half years, was admitted to the Royal North Shore Hospital complaining of headache, nausea and dizziness. From the history it was learnt that the child had had threadworms for four months at least, and that this infestation had proved resistant to several vigorous courses of treatment with santonin and calomel. Apart from this the child had been in apparently good health.

On September 8, 1942, she had been given a course of phenothiazine as an antihelminthic. The dosage was two grammes per day (two powders three times a day), and the treatment was continued for seven days. On the last day of treatment (September 15) and the two following days (the seventh to ninth days) it was noticed that the child had lost her appetite, that she was irritable and complained of severe headache and a tightness in her throat and chest, and that she became dizzy on standing. The urine was port-wine colour.

On her admission to hospital the patient's temperature was 99.4° F., and her pulse rate was 120 per minute. She was very pale and slightly jaundiced, but she was not distressed. She showed no other abnormality, and there was no evidence of an enlarged liver or spleen. A full blood count was made immediately, and the results were as follows: the red blood cells numbered 1,810,000 per cubic millimetre, the haemoglobin value was 40% (5.5 grammes per 100 cubic centimetres) and the colour index was 1.1; of the leucocytes, 62% were neutrophile cells, 33% were lymphocytes, 1% were monocytes, 3% were myelocytes and 1% were premyelocytes. Examination of the red cells disclosed anisocytosis, polikilocytosis and punctate basophilia. Nucleated red cells were present. The Van den Bergh test produced an indirect reaction with the patient's blood. The serum bilirubin level was 2.5 milligrammes per centum.

Various laboratory tests were made. The urine was sterile; very occasional red blood cells were seen in it on microscopic examination. For the next two days the pulse rate ranged between 100 and 130 per minute.

A transfusion of fresh citrated blood, of the same group as that of the recipient and completely compatible, was given immediately; 400 cubic centimetres of blood were given over a period of about five hours by the constant drip method.

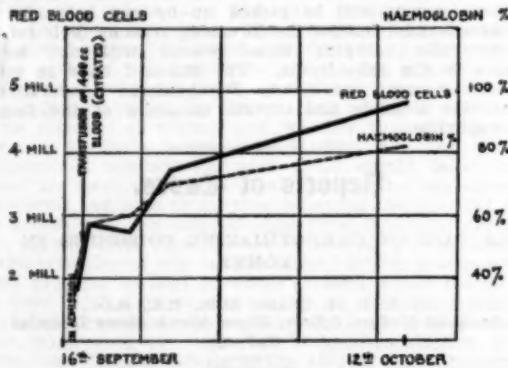


FIGURE I.

Acute phenothiazine poisoning: graph showing response to blood transfusion and subsequent improvement in the number of red blood cells and the haemoglobin value.

On September 18, the following day, there was a distinct general improvement in the child's condition. The headache was much less troublesome, there was no nausea and she was less pale. The urine was still discoloured. A blood count gave the following information: the red blood cells numbered 2,870,000 per cubic millimetre, the haemoglobin value was 57% and the leucocytes numbered 14,300 per cubic millimetre, 8% of the red cells were reticulocytes and nucleated red cells numbered two per 200 leucocytes. Examination of a smear revealed less evidence of new cell regeneration than on the first examination. Spherocytes were numerous. There was no evidence of increased fragility of the red blood cells. No further special treatment, other than the transfusion, was given; general measures included iron therapy and the administration of Dover's powders for sedation.

A further blood count on September 21 gave the following information: red blood cells numbered 2,750,000 per cubic

millimetre, the haemoglobin value was 60% (8.7 grammes per 100 cubic centimetres) and the leucocytes numbered 6,250 per cubic millimetre, 39% being neutrophile cells, 54% lymphocytes, 1% monocytes and 6% eosinophile cells.

The results of subsequent blood counts were as follows. On September 24 the red blood cells numbered 3,700,000 per cubic millimetre, the haemoglobin value was 70% (10.2 grammes per 100 cubic centimetres) and the leucocytes numbered 7,200 per cubic millimetre, 61% being neutrophile cells, 24% lymphocytes, 8% monocytes and 7% eosinophile cells. Occasional red cells showed diffuse polychromic staining. On October 12 the red blood cells numbered 4,850,000 per cubic millimetre, the haemoglobin value was 82% (11.8 grammes per 100 cubic centimetres) and the leucocytes numbered 10,000 per cubic millimetre, 45% being neutrophile cells, 45% lymphocytes, 5% monocytes and 5% eosinophile cells. The reticulocytes numbered less than 0.5% of red cells. Blood platelets were plentiful. Complete restoration of the blood picture had been effected, and her parents stated that she had regained her usual well-being.

Commentary.

This case of anaemia caused by phenothiazine is one of the most serious yet published; in it are recorded a blood count of 1,810,000 red blood cells per cubic millimetre, a haemoglobin value of 40% and the presence of nucleated red cells. Records of a number of other cases mention a similar acute haemolytic anaemia. De-eds, Stockton and Thomas⁽¹⁾ were the first to publish an instance of such an anaemia. Of nineteen patients treated, three developed varying degrees of anaemia, the red cells in one case falling to 1,500,000 per cubic millimetre. Hubble⁽²⁾ reported three further cases of anaemia occurring among 28 patients, in one of whom the red blood cells fell to 2,900,000 per cubic millimetre, 10% being reticulocytes, and jaundice was a pronounced feature. R. D. C. Johnstone, in reporting two cases of acute haemolytic anaemia and summing up the literature in February, 1942, made the following statement:

In reconsidering these published cases in which phenothiazine has been used it is seen that out of 58 patients so treated, no fewer than eight have shown some form of toxic reaction, at least one of which has been severe enough to require active treatment. Such high incidence of toxicity, namely, 13%, can hardly justify its use.

To crown all this and to give a final warning against this drug, D. R. Humphreys⁽³⁾ records the case of a child, aged six years, who died from acute haemolysis following treatment with phenothiazine.

In the light of these cases it must surely be conceded that although this form of treatment is effective in intractable cases of threadworm infestation and attractive to administer, surely we cannot countenance its continued use. This is especially so since the use of gentian violet in these cases is recommended by a number of workers (Wright and Brady⁽⁴⁾ and others). The advisable dosage of gentian violet is one grain (0.065 gramme) in tablet form given three times a day before meals for a period of eight days, followed by a rest period of seven days. Further treatment is repeated for eight additional days. For children one-sixth of a grain (0.01 gramme) is recommended for each apparent year of age. The above-mentioned workers consider that this drug is very well tolerated. Its contraindications include renal insufficiency, pregnancy, cardiac, hepatic and gastrointestinal diseases, and concomitant gastric infections.

Summary.

1. A case of haemolytic anaemia due to phenothiazine therapy is reported.
2. A warning is sounded as to the toxic effects.
3. An outline of gentian violet therapy is given.

Acknowledgements.

I should like to thank Dr. B. T. Shallard, under whose care this patient was admitted to and treated in the Royal North Shore Hospital, for permission to publish this case. I should also like to thank Dr. Shallard and Dr. Beatrix Durie, pathologist to the Royal North Shore Hospital, for their constructive criticisms and help.

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ISOIMMUNIZATION AGAINST BLOOD FACTOR N.

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THE frequent use of blood transfusions in various surgical and medical conditions has drawn attention to the risk of active immunization of the recipient against antigens in the donor's blood. These accidents, which occur exclusively in cases in which repeated transfusions are necessary, can be regarded as acquired incompatibilities.

As attention centres at present on the importance of the Rh factor of Landsteiner and Wiener, it is opportune to discuss the importance of other antigens which occur normally in the red cells. The following case illustrates this point.

Clinical Record.

Mr. F., aged sixty-three years, had an inoperable carcinoma of the stomach. On August 1, 1942, he received 600 millilitres of blood by direct transfusion. The patient and donor were of group A (II). There was no reaction, and the condition of the patient improved.

On August 8 citrated blood of group A (II), from the Alfred Hospital blood bank, was given by drip transfusion. No incompatibility was detected by cross-matching. After 100 millilitres had been given, the patient complained of pain in the back and general discomfort. The transfusion was stopped. Shortly afterwards the patient had a rigor. Examination of a specimen of urine obtained six hours later revealed no abnormalities, and no further untoward symptoms developed.

Laboratory Examination.

Blood from patient and donor was submitted for study on August 9. All tests were performed in duplicate at 37° C. and at room temperature, by means of the hanging drop and test tube technique. Cells were used in 2% suspension after three washings with physiological saline solution. Patient and donor belonged to group A. The blood factors were found to be as follows: patient, M Rh+; donor, MN Rh+. Cross-matching by the hanging drop technique with the patient's serum and the donor's cells resulted in slight agglutination; by the test tube technique, it resulted in complete agglutination up to a dilution of 1/10; with the donor's serum and the patient's cells, it resulted in no agglutination. The serum of the patient was tested against a number of other cells of known constitution. The results are given in Table I.

TABLE I.

Cells.	Agglutination.
A ₁ MN Rh negative ..	+
O N Rh+ ..	+
A ₁ N Rh+ ..	+
O MN Rh+ ..	+
A ₁ M Rh+ ..	o
O M Rh+ ..	o

Blood of the donor who gave the first direct transfusion of 600 millilitres, which caused no reactions, was obtained and tested. This first donor had the following blood formula: A₁ MN Rh+.

Discussion.

The results of these tests suggested that the first transfusion had caused isoimmunization of the patient against

factor N, and that this was the cause of the accident during the second transfusion.

The further history of the patient gives strong support to this conclusion. Four transfusions of 600 millilitres each from donors whose cells did not contain factor N were given on August 15 (direct), on August 29 (citrated blood by drip), on September 12 (direct) and October 3 (citrated blood by drip) without causing any reactions.

Comment.

This case illustrates the fact that special care has to be exercised when repeated transfusions are administered. The usual blood-grouping and cross-matching technique is not sensitive enough to detect slight agglutination caused by low titres of antibodies in the recipient's blood. The usual test (the mixing of one drop of the recipient's serum with one drop of the donor's blood on a slide) was not sufficient to detect the antibodies against N. The acquired incompatibility, however, could be clearly demonstrated when washed cells were mixed in suitable proportions with the recipient's serum, either in a hanging drop preparation protected against evaporation or in the test tube.

Summary.

A transfusion accident is recorded which was caused by active immunization of the recipient against blood factor N by a previous transfusion.

Acknowledgement.

M and N testing fluids were kindly supplied by the Commonwealth Serum Laboratories, Melbourne.

Reviews.

THE ORIGIN OF SYPHILIS.

Dr. J. R. WHITWELL has gathered together in his book "Syphilis in Earlier Days" all the evidence for and against the American or Haitian origin of syphilis.¹

As in previous wars, the present world-wide upheaval has led to great increase in the number of cases of venereal disease. In Great Britain in 1940 there was an increase of 23% over the number of cases of syphilis in 1939. It is therefore of interest at a time when venereal disease is one of the problems of our community, to read the evidence on which the exponents of the rival theories of the origin of the disease base their opinions.

During the last few years there has been a decided swing on the part of medical historians in favour of the pre-Columbian origin of the disease. The famous German medical historian, Karl Sudhoff, who recently died at the advanced age of eighty-five, was largely responsible through his researches for this change. Sudhoff proved that the long-accepted fable of the epidemic among the soldiers at the siege of Naples from March to May, 1495, had no basis in fact. To quote from his essay: "The epidemic in Naples is empty 'historical' babble". Careful researches in Neapolitan archives and in all the old chronicles leave no doubt of this. For the frightful decimation of the garrison at Naples, under the Duke of Montpensier and the Constable d'Aubigny, during the winter, spring and summer of 1495-1496, typhoid fever, and not syphilis, was demonstrably responsible." Charles Singer also favours the European origin of the disease which was often diagnosed as leprosy. It caused great loss of life and developed everywhere as a problem of national importance. Various titles were given to it and only tardily was it recognized that the disease was usually of venereal origin. The nomenclature of the disease was extraordinary; Dr. Whitwell gives a list of over eighty names which were applied to it. As he says, beginning with the Chinese who called it the Portuguese disease, blaming the people of that nation at that time in India, that is, in 1505, as introducing the disease into China, there began "that strange catalogue of self-exculpatory nomenclature, to which each country, in its turn, has added a name".

On the other hand, the exponents of the theory of the American origin find support in various contemporary accounts, and in the dubious nature of the evidence of pre-

¹ "Syphilis in Earlier Days", by J. R. Whitwell, M.B.; 1940. London: H. K. Lewis. Crown 8vo, pp. 98. Price: 5s. net.

Columbian syphilis in Europe, with reliance necessarily limited to bone lesions, and even these not absolutely diagnostic.

The Italian historian, Castiglioni, believes that "the truth is to be found in a middle ground. The disease was probably noted in Europe before the return of Columbus and the doubtful allusions of early writers really apply to syphilis, and it was only after 1493, as a result of the great movements of troops throughout Europe, that the disease became almost universal". Once again, as in the Great War, as in all wars in past centuries, and now in the World War, history repeats itself.

However, to return to Dr. Whitwell's book. In it the author has most diligently collected the evidence relating to syphilis. From pre-historic and early civilizations, from the medical writings of many doctors of many nationalities, from biblical sources, to name only a few, through mediæval times down to the present, he has clearly displayed and classified all the evidence dealing with both sides of the controversy.

An interesting chapter is devoted to the question: "Is it (syphilis) a new disease?" It is interesting to find that there were many medical men of standing, contemporaries of Columbus, who doubted if it was a new disease, but perhaps one of great antiquity. The author gives many quotations from the Old Testament which are, to say the least, highly suggestive when one reads the numerous hygienic laws laid down as to the avoidance of disease resulting from intercourse with the "daughters of Moab". In Chapter XII of *Leviticus* special guidance is given in the diagnosis of "leprosy"; many of the symptoms described would rather appear to describe the symptoms of syphilis, for example, the condition of the scalp which in leprosy is almost never affected, while in the syphilitic it is very frequently involved.

In another section the author traces step by step the evolution, symptom by symptom, of the syphilitic syndrome as we know it today. Albucasis in the eleventh century described a form of "leprosy" closely resembling syphilis. In the thirteenth century Gilbertus Anglicus described the initial lesion; in the next century Chaucer's John of Gaddesden states that the lesion was due to copulation, and so on down to the eighteenth century when John Hunter made his great mistake in confusing gonorrhœa with syphilis—which mistake was disproved by Benjamin Bell in 1793. In the next century this observation was confirmed by Ricord. In another chapter the evolution of our knowledge of general paralysis of the insane is discussed. Several distinguished sufferers from this disease are mentioned and their histories described. The outstanding example is supplied by the Roman Emperor Calus Caesar Augustus Germanicus, who was born in A.D. 12, the son of Germanicus and Agrippina, who received the nickname of Caligula because as a boy he wore "calige" or soldier's boots. The description of his gradual deterioration would supply a modern psychiatrist with a classic case of general paralysis of the insane.

This small book is full of interest and should be read apart from its medical interest; the lay reader of history would learn from it how great a part this disease has played in the history of mankind.

REGIONAL ANALGESIA.

"REGIONAL ANALGESIA FOR INTRA-ABDOMINAL SURGERY", a little book by Norman R. James, describes a technique of local anaesthesia for abdominal operations.¹ Dr. James has honesty, sincerity and enthusiasm. And yet we cannot commend his book. For what arrests our attention first is his advocacy of the method of splanchnic anaesthesia by the posterior route, introduced by Kappis in 1918. It is effective, but whether it is safe enough for general use is more doubtful. Years ago, chloroform had to give way to ether, notwithstanding the fact that chloroform had certain strong advantages, because ether had to be recognized, against opposition, as many times safer. If the later and safer method of anterior splanchnic anaesthesia devised by Braun is not used by present-day physician-anæsthetists in

¹ "Regional Analgesia for Intra-abdominal Surgery, with Special Reference to Amethocaine Hydrochloride", by Norman R. James, L.R.C.P. and S. (Edinburgh), D.A. (R.C.P. and S. England); 1943. London: J. and A. Churchill, Limited. 7½" x 3½", pp. 63, with 27 illustrations. Price: 6s.

England, it is for other reasons than "safety first". The careful survey by de Takats in 1927 (*Surgery, Gynecology and Obstetrics*, April, 1927, page 501) of the literature up to that date presented a series of 2,475 cases in which the posterior route was used, and 1,292 in which the anterior route was used. In the former group there occurred eight deaths (two not due to the anaesthesia), and in addition 15 cases of collapse, one of pleural puncture, one of delirium, one of double vision and two of anaesthesia of the lower extremity. There were no deaths in the other group, and no cases of collapse following injection. If the deaths in the first group are reckoned as six, the rate may be estimated as 1 in 411 and the collapse rate as 1 in 179. The Report of the Anæsthetic Committee of the British Medical Association in 1901 (*The Lancet* Volume I, 1901, page 280) recorded 18 deaths under chloroform anaesthesia in 13,393 cases, a rate of 1 in 744. Statistics of Saint Bartholomew's Hospital from 1878 to 1887, quoted by Waller (*British Medical Journal*, November 20, 1897, page 1469), record 10 deaths in 12,368 cases, or 1 in 1,237. In the period from 1884 to 1895, there were 14 deaths in 22,219 cases, a rate of 1 in 1,587. If the figures here quoted represent facts, the death rate to be expected in posterior splanchnic anaesthesia is from twice to three times that of chloroform anaesthesia. Those who have to take responsibility for the safety of a patient should give themselves seriously to the consideration of these figures and ask themselves what they are going to do about them. Ether displaced chloroform because it was safer. Now local anaesthesia is put forward as much safer than ether, and is regarded as the safest of all methods of anaesthesia. But that all depends. It is possible enough that ignorance of anatomy and clumsiness with the needle may account for some of the untoward results connected with the posterior route, and it is also probable that the anterior route derived benefit from the fact that it was of necessity used only by practical surgeons. However, if we admit all that, we have also to admit that deaths under chloroform anaesthesia were often attributable to unskilful administration.

We fear that a principal reason for the adoption by some anæsthetists of the posterior and more dangerous route is the fact that they are expected to keep themselves and their manipulations out of the operative field, while the surgeons themselves, who ought to take a responsibility, have not been sufficiently interested. That is not to the surgeon's credit. But history shows that we must expect inertia in surgeons. Local anaesthesia technique is essentially a surgical technique, demanding not just a vague impression, but an extensive and precise knowledge of surgical anatomy, and a practical familiarity with surgical methods. The anæsthetist should act, or be competent to act, as second surgical assistant. During the operation, certain parts of the analgesic technique ought to be carried out by the operating surgeon himself, who must know what he wants, and how to obtain it. There must be an understanding collaborative team. That is the way, and the only way, to smooth and consistent success, not alone in abdominal surgery, but in all surgery. We must leave behind the customs and traditions of the physician-anæsthetist, brought up in the tradition of inhalation anaesthesia.

But let us now go on to say that if anyone can by care and thought remove dangers from the posterior method, the author of this book, Dr. N. R. James, is the man. His technique may be criticized as over-elaborate in some respects. That recommended for appendicectomy is even cumbersome in its elaborateness. But these, if they are faults, are faults on the right side. We can gather that Dr. James has been handicapped by the ignorance, clumsiness and incompetence of some surgeons. In this connexion he states that "unfortunately . . . the surgeon usually employs the anæsthetist . . . (who) tends to accept meekly what is often unjust reproof, and feels compelled by financial reasons to refrain from openly criticizing what is obviously poor surgery".

The drug Dr. James has chiefly employed is that known as amethocaine, pontocaine, "Decicain" or anethaine. He favours this because it gives some three hours of analgesia, and in the dosage used appears to be safe. It is not safe in too concentrated a solution. We understand that not long ago there was a death in a New Zealand hospital from the injection of a 2% solution into the urethra.

We conclude by noting that Figure XII could not be passed by any anatomist. It represents in cross-section the external intercostal muscle as originating wholly on the lower part of the external surface of the upper rib, and proceeding down to be attached to the upper part of the external surface of the rib below. This is all very bad. Local anaesthesia technique demands, not a vague impression, but a precise knowledge of anatomy.

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NUTRITION IN PREGNANCY.

THAT the nutrition of pregnant women and of infants ought to receive special attention, is a fact which, though well known, requires emphasis at the present time when so many kinds of food are scarce and certain products are rationed. It was pointed out in a recent discussion in these pages on food and its distribution among the nations, that the average person in the community knows much more about food and nutrition than he did a decade or two ago. This, as previously agreed, is all to the good, but no one will contend that the education of the public in the matter of food is complete. Too many people still think of food in terms of the different articles in the diet rather than of their chemical composition. Such people may pardonably be a little confused when they find that medical officers of health extol in the daily Press the value of an article of diet that happens to be plentiful when another whose virtues had recently been vaunted has become unprocureable or scarce. In fact a cynic has recently remarked that available food always seems to be the most suitable food from the health point of view. This is, of course, so far from the truth that no argument is needed to expose the falsehood.

Any medical practitioner with a reasonably large experience of obstetrics in general practice would have little difficulty in recalling experiences to show that it pays to be eclectic in the matter of food for pregnant women. But common sense alone will show that nutrition is an important factor in the successful outcome of a pregnancy. A well-nourished mother will withstand the stress of pregnancy with greater ease than a mother who is below par for lack of proper food; she is also much more likely to produce a live and lusty infant. Strangely enough, it may be remarked in parenthesis, the woman herself is sometimes the last to appreciate the truth of this statement. No one believes that the well-to-do are always wise in their choice of food, and every one knows that the poor cannot afford to buy sufficient

quantities of the right kind of food (sometimes they can buy none) even if they know what they ought to have. This means that "economic status" has to be considered in all nutrition problems; poverty acting alone can cause malnutrition, but even in its absence, its sister ignorance can achieve the same result.

In 1938 Margaret Balfour reported to the Royal Society of Medicine¹ the results obtained in certain areas in England and Wales by supplying special food to pregnant women who were the victims of unemployment and poverty. The work started as a charitable effort to relieve distress among the very poor, but the reduction of maternal mortality which took place among the women who had been helped was so great that the work was extended. After the work had been going on for two and a half years it was found that among 10,384 mothers who received extra food, the death rate from puerperal sepsis was 0.09% (representing one death) and that in a control group of 18,854 mothers who did not receive the foods, the rate was 2.91% (representing 46 deaths). The maternal death rate from other causes was about 50% less and the infant death rate (recorded only for six months) was nearly 50% less among the treated group. These remarkable results followed the provision for each woman of three pounds of "milky foods" (such as "Brandox", "Ovaltine" or "Colact") and half a pound of "Marmite" per month for three months prior to the confinement. Another notable example of the effect of economic status on nutrition was quoted during a recent discussion on nutritional anaemia in women and children as a wartime problem by Helen M. M. Mackay, who spoke for herself and several collaborators.² Mackay quoted some observations by R. A. McCance and others, published in 1938. Before these are mentioned it may be well to note Leonard Findlay's contention at the same discussion that the term nutritional anaemia may be loosely used; a low haemoglobin level is not necessarily the result of a dietary error; many factors determine the haemoglobin level of an individual and these must all be considered before the true cause can be assigned. With Findlay's statement in mind, some significance can be seen in McCance's findings. He found "a steady fall in the haemoglobin level of pregnant women grouped by income level, from an average of 90% for those with an income of 25s. to 40s. per head after payment of rent, to an average of 76% for those with under 6s., a difference of 14% in haemoglobin". The first group had an average daily intake in round figures of 15 milligrammes of iron and 55 grammes of animal protein, and the last nine milligrammes of iron and 28 grammes of animal protein.

These examples of the effect of proper feeding on the pregnancies of women whose diet is deficient in essential elements serve as a useful introduction to reference that should be made to a special article on nutritive requirements in pregnancy and lactation by J. Harry Ebbs.³ This is one of a series prepared under the auspices of the Council on Foods and Nutrition of the American Medical Association to be published as a handbook of nutrition. Ebbs discusses in turn: fat and carbohydrates; protein; calcium, phosphorus and vitamin D; iron; and the

¹Proceedings of the Royal Society of Medicine, Volume XXXI, 1937-1938, page 911.

²Proceedings of the Royal Society of Medicine, December, 1942, page 69.

³The Journal of the American Medical Association, January 30, 1943.

remaining vitamins. He draws attention to McCollum's statement that during pregnancy there is a rise in basal metabolism which is 23% higher at term than at the fourth month. The gain in weight, however, is only 14%. The foetal tissues have a higher specific metabolism per unit of weight than maternal tissues. The importance of fat and carbohydrates, apart from their being a source of Calories, lies in the absorption of vitamins by the fat and the protein-sparing action of carbohydrate. The ratio of carbohydrate and fat to protein and other "protective" foods in the diet usually varies with the economic level of the family—the lower the income, the lower the intake of animal protein and vitamin-containing foods. The needs of the normal non-pregnant woman are about one gramme of protein per kilogram of body weight; this means that a non-pregnant woman weighing ten stone will need 63 grammes of protein per day. In order to provide for the growth of the foetus and the uterus, the total should reach a level of between 90 and 125 grammes a day. One-half of the protein in the diet should come from meat, eggs and dairy products. Complete chapters might be written on the parts played by calcium, phosphorus, iron and the several vitamins in pregnancy. It must suffice to mention one or two points. That there is a close relationship between calcium, phosphorus and vitamin *D* is well known. Ebbs quotes authorities to show that certain symptoms during pregnancy may be alleviated by the exhibition of calcium and several others to support the statement that a daily intake of 1.5 to 2.0 grammes of calcium is necessary. There is such a condition as foetal rickets and there is evidence that a deficiency of calcium and vitamin *D* in the mother's diet may predispose to the development of rickets in the child. An important investigation by F. W. Clements on rickets in infants under one year of age was published in this journal on March 21, 1942, and is entirely relevant to the present discussion. Vitamin *D* is related to the utilization and retention of calcium and phosphorus in the body. Ebbs points out that the amount of vitamin *D* which is necessary to adult mineral metabolism is not known and a daily amount of 400 to 800 units as needed in the latter stages of pregnancy is arbitrarily stated. The administration of vitamin *D* in some form is, he thinks, indicated. Clements expressed the same view and his recommendations will amply repay perusal. Incidentally the supplementary dose of cod liver oil which supplies vitamin *D* will, together with the diet, supply what is necessary of vitamin *A*. It must be remembered that when calcium is supplied in the food, the requirements of phosphorus are as a rule automatically met. In regard to iron, Ebbs refers to the finding by H. M. M. Mackay, previously mentioned, in a special report to the Medical Research Council of Great Britain in 1931, that there was a lower level of haemoglobin in every month of the first six months of life in infants born of anemic mothers than in infants born of mothers without anemia. Several investigators have shown the value of supplementing the diet of the pregnant woman with medicinal iron. In regard to the vitamin *B* complex Ebbs refers to work by himself and two collaborators when they noted changes which occurred when the vitamin *B*₁ intake of women on poor diets attending antenatal clinics was doubled or trebled. Many of the minor aches and pains and numerous complaints disappeared, and the mental attitude changed from

one of apathy and discontent to one of interest. This bears out the report of Margaret Balfour. Ebbs believes that if the diet contains an adequate amount of whole grain products, milk, meat, egg and vegetable, the components of the vitamin *B* complex will be supplied in sufficient amount. The intake of vitamin *C* should be increased above the amount usually required, but in regard to vitamin *E* it is unlikely that serious deficiency can occur on account of its widespread distribution in food-stuffs. In a table drawn up by the Food and Nutrition Board of the National Research Council in 1941, reproduced by Ebbs, we find that the following are the recommended daily allowances of dietary essentials for women in the latter half of pregnancy: Calories, 2,500; 85 grammes of protein; 1.5 grammes of calcium; 15 milligrammes of iron; 6,000 international units of vitamin *A*; 1.8 milligrammes of vitamin *B*₁; 100 milligrammes of vitamin *C*; 2.5 milligrammes of riboflavin; 18 milligrammes of nicotinic acid; 400 to 800 international units of vitamin *D*. The daily diet necessary during pregnancy to supply the food essentials is stated in the following way:

Milk, 40 ounces (2½ pints); cheese, 1 ounce; butter, 2 ounces; egg, 1 serving; meat, 1 serving (liver once a week); potato, 1 serving; yellow or green leafy vegetable, such as carrots, spinach, chard, string beans, or green peas, 1 serving; vegetable such as cabbage, turnip or tomato, 1 serving; orange juice, 3 ounces, or grape fruit, 4 ounces, or tomato juice, 7 ounces; other fruits, 1 serving; whole grain or enriched bread, 4 slices; whole grain or restored cereal, 1 serving. Extra Calories necessary would be provided in the other foods eaten in the daily diet according to the individual needs and taste. A supplement of fish liver oil or its equivalent should be prescribed to provide 400 to 800 units of vitamin *D*.

When we compare the diet recommended by Ebbs for normal pregnancy with that which produced striking results in Margaret Balfour's series we marvel that the latter patients did as well as they are reported to have done. Women fed throughout pregnancy on Ebbs's recommended diet would be expected to achieve perfection in their own health and in that of their infants. In the present state of food supply we should imagine that very few women will be able to obtain the standard diet described by Ebbs. That is no reason why it should not be set up as an ideal to be achieved if possible. In different parts of Australia local difficulties in food supply will arise and some kinds of food are scarce anywhere. Provision is made in the rationing regulations dealing with food that special arrangements can be made to meet special circumstances. Pregnancy is a circumstance which requires special consideration. One difficulty that arises is due to a woman's unwillingness to consume all the extra food herself, especially if she already has one or two young children. This is remarked upon by Balfour, who found that sharing of the milky foods within the family was difficult to prevent. With "Marmite" the matter was different—children did not like it and the mothers could be persuaded to take it. Of course, the suggestion that has sometimes been put forward that a money grant should be made is futile, for probably the food would seldom be bought, and if the most suitable food was bought the question of sharing would still arise. It will be held that education of women is the remedy. It may be, up to a certain point, and should be attempted, but it is a slow process and will never be wholly effective. Some supervision is necessary. This is difficult to obtain, and the best that can be suggested is supervision by the prac-

titioner in his consulting room and in the antenatal clinic and by health visitors connected with the latter organization. But over and above this, government supervision of supply, with a man or woman in charge who understands what is wanted and has powers of free distribution, cannot very well be avoided.

Current Comment.

THE RESULTS OF TREATMENT IN BRONCHIAL ASTHMA.

In 1935 Leon Unger reported the results of the treatment of 207 patients suffering from asthma who had been under observation for periods varying from one to thirteen years. In collaboration with A. A. Wolf he has reviewed these cases again and has also reviewed a second series of 252 further cases—a total of 459 cases.¹ No patient was included unless a period of at least one year had elapsed since treatment was started and the period of observation lasted up to a year. Apparently a good deal of care was taken to prove that the patients actually were suffering from asthma. A careful history was taken and a physical examination was made. Scratch tests and sometimes intradermal tests were made. Ophthalmic and nasal tests and passive transfer tests were also made. Clinical experiments were carried out with suspected allergens whenever possible and were looked on as the most authentic method of obtaining accurate information. Blood counts were made, urine was examined, Wassermann and Kahn tests were made and sputum was examined for tubercle bacilli and eosinophile cells. Fluoroscopic examination of the chest was sometimes made. No mention is made of the examination of gastric contents for tubercle bacilli or of methods of cultivation for the discovery of these organisms. Other biochemical tests were applied. Patients who were suffering from silicosis, tuberculosis or cardiac disease were excluded and patients who cooperated badly were not included in the study. In regard to treatment, the offending allergen was eliminated when possible; otherwise desensitization was used. When no cause could be discovered the usual non-specific measures were employed.

In their review of the 207 patients of the 1935 report Unger and Wolf point out that of 45 patients who were described in 1935 as 100% ("cured"), one had been accidentally killed and one had died of pneumonia, nine could not be traced and the remainder were still "entirely or almost entirely" free from symptoms. Of 104 previously classed as improved, 19 had joined the 100% ("cured") group, 63 remained "improved" (90% to 95% relieved), four were worse and six had died; twelve could not be traced. Unger and Wolf then turn to the whole group of 459 cases. They drop the classification into extrinsic and intrinsic groups which they used in 1935 and place the patients in "paroxysmal" and "chronic" groups. This is rather a peculiar idea. The reason for the classification is that the grouping is superior because it can be made at the time of the first visit and because it indicates a much more accurate prognosis than any other classification. Paroxysmal asthma would often degenerate into chronic asthma and it would therefore be expected that better results would be obtained (as Unger and Wolf found) with asthma of the former type. Ninety-three of 298 patients with paroxysmal asthma obtained 100% relief from symptoms and only four of 161 patients with chronic asthma obtained this degree of relief. The percentage of "improvement" was also much higher in the paroxysmal group. One striking feature was the high incidence of paroxysmal asthma in the first decade of life. The best results were obtained among those whose paroxysmal asthma began during the first decade of life; the prospect for complete relief became less with advancing age, but this was not

entirely true, for the prognosis was specially good in the age group twenty to twenty-nine.

These observations are of interest and recall similar results recorded by F. M. Rackemann in 1932 (see *THE MEDICAL JOURNAL OF AUSTRALIA*, March 4, 1933, page 287). He found in 1928 that of 1,074 patients, 213 had been relieved of their symptoms for two years or more. In 1932, 131 of the 213 were still "cured", 49 had had a recurrence, 6 had died and 27 could not be traced. Of the 131 still "cured", 64 suffered from extrinsic, 55 from intrinsic and 12 from unclassified asthma. Rackemann held that cure was accomplished by "removal of the trigger which fired the attack, but obviously the gun remains loaded in most, and probably in all, cases". Sir Arthur Hurst, writing in the *British Medical Journal* of April 3, 1943, makes much the same sort of statement. He holds that "asthma treatments" produce approximately the same percentage of temporary "cures". "Unfortunately the asthma diathesis remains unaffected, so that recurrence is just as frequent as after spontaneous remissions". Although it may be useful from the point of view of prognosis to be able to say that one patient has paroxysmal asthma and another has chronic, it is more scientific and therefore better to look at asthma as extrinsic and intrinsic. This classification is certainly a more logical approach to treatment. Unger and Wolf and others such as Rackemann have shown that treatment does produce important and lasting successes, and yet perusal of a paper such as Hurst's makes the thoughtful practitioner wonder how large the psychological element in asthma really is. Hurst concludes his paper with the following words:

But though I am no believer in "asthma cures", and though I regard most of the popular treatment of today, like that of ten, twenty and thirty years ago, as nothing more than gross suggestion, yet I know that every asthmatic can derive much benefit from good advice. He can be taught a way of life and, among other things, how to avoid the exciting causes of his particular brand of asthma, how to control attacks which he is unable to prevent, and above all how to be happy in spite of the bad luck of having been born with the asthma diathesis.

No attempt has been made to describe the methods of treatment used by Unger and Wolf. As a matter of fact the account given by them is not particularly detailed. The important fact to be remembered is that each patient with asthma presents an individual problem and that the use of haphazard methods is likely to do just as much harm as good. An editorial in the *British Medical Journal* of April 3, 1943, puts the matter in a particularly happy way: "The study of asthma is an admirable antidote to those whose disposition tempts them to accept uncritically the last new thing discussed in the market-place of medicine."

LABOUR IN YOUNG AND OLD PRIMIPARA.

THERE is no doubt that obstetricians are tempted to interfere with natural delivery of a very young or of an old *primipara*. In the one instance they fear a difficult labour and in the other they know that the woman may not have another chance of producing a baby. Y. M. Bromberg and A. Brzezinski, writing from a hospital in Jerusalem in *The Journal of Obstetrics and Gynaecology of the British Empire* of December, 1942, do not think that this attitude is always justified. They base their conclusions on the delivery of 136 *primipara*, aged 14 to 16 years, and 67, aged 35 to 44 years. They find that labour in a young *primipara* does not differ in any essential respect from normal labour and hold that the age factor should not play any principal role in the determination of obstetric invention. They also maintain that fear of complications in the delivery of old *primipara* is exaggerated. They have noticed increased duration of labour, a high percentage of dry labour and uterine inertia, and a great number of premature labours. Conservative methods, however, should be adopted and Cesarean section considered only when a serious complication is associated with the age factor.

¹ *The Journal of the American Medical Association*, January 30, 1943.

Abstracts from Medical Literature.

PHYSIOLOGY.

Experimental Trinitrotoluene Poisoning and the Effect of Diet.

H. P. HIMSWORTH AND L. E. GLYNN (*Clinical Science*, December, 1942) discuss the accounts of "T.N.T." (trinitrotoluene) poisoning in munition workers already published and then describe their experiments made upon Wistar rats. Their results indicate that the effect of this poison on rats is dependent upon the nature of the diet. Severe symptoms and marked pathological lesions develop in rats taking a diet with a high fat content, whilst in animals taking a diet with a high carbohydrate or a high protein content the ill effects are slight or absent. Chronic "T.N.T." poisoning in rats shows the following features: (a) loss of weight; (b) increased appetite; (c) excretion of high concentrations of "T.N.T." derivatives in the urine; (d) changes in the blood and associated tissues, the characteristics of which are a great decrease in haemoglobin, the appearance of normoblasts, reticulocytes and polychromatic erythrocytes in the peripheral blood, an erythoblastic hyperplasia of the bone marrow and siderosis of the spleen; (e) hepatic lesions which range from fatty infiltration to an acute necrosis of the parenchymal cells; (f) loss of hair. Evidence is presented that the effect of the diet with a high fat content in facilitating the toxic action of "T.N.T." is due to the fat diet so influencing the animal's metabolism as to impede its ability to dispose of the "T.N.T." within its tissues. The close resemblance between the effects of "T.N.T." in the rat and the findings in cases of "T.N.T." poisoning in man is demonstrated.

Basal Heat Production in Infants.

HELEN R. BENJAMIN AND A. A. WEECH (*American Journal of Diseases of Children*, January, 1943) describe the results of 217 observations on the basal heat production of two infants between the ages of six and twenty months. Forty additional observations on two other infants are included. An appraisal is given in statistical terms of the day to day fluctuations in the basal heat production of individual infants. The magnitude of these fluctuations is large. Expressed in terms of the coefficient of variation they amount to 9% in this study, as compared with a reported value of 5% for adults. Some infants show a greater degree of fluctuation than others, and in general the young infant is more variable than is the same infant at a later age. The data are analysed to determine the relation between heat production and several measures of growth. The association between total Calories and body weight was closest. When heat production was referred to a unit of mass (Calories per kilogram), there was no evidence of change with advancing age. In contrast, when heat production was referred to a unit of surface area or to a unit of height, there was reliable evidence of change with growth. These data do not deny the inference which might be drawn from extrapolating to

younger infants the extensive data reported by Lewis, Kinsman and Iliff, namely, that heat production per kilogram of weight declines steadily throughout the years of childhood. Different infants of the same age vary significantly in the quantity of heat produced per kilogram of body weight. Evidence could not be adduced to support the view that the excess heat production per kilogram of tissue of the infant over that of the adult is due in any substantial degree to the normal changes in the rate of growth.

Obstruction of Blood Vessels and the Total Ventilation Caused by Muscular Effort.

J. P. DELUCCHI (*The Journal of Aviation Medicine*, February, 1943) describes some experiments in which the effect on the ventilation of the lungs of wearing tight boots when work is done by the leg muscles was studied. The effect of the boots was produced by a sphygmomanometer cuff wrapped around the calf. The pressures used in the cuff were one-half and two-thirds the systolic blood pressures, the last-named pressure being more or less that of tight boots according to the subjective sensations of five army officers. The ventilation produced with an obstruction of one-half the systolic pressure was not much greater than that occurring in the absence of any obstruction, but when the pressure in the cuff was raised to two-thirds of the systolic pressure the ventilation increased for any foot pressure above ten pounds. For pressures of ten pounds weight there was little effect of ventilation. It would seem that tight boots are undesirable for pilots since they increase the ventilation when work is done with the legs. This effect should be recognized by flight commanders in planning the duration of flights in relation to the oxygen supply of the aeroplane.

Edema following Ischaemia in the Rabbit's Ear.

E. E. POCHIN describes some experiments carried out on the depilated ear of some sixty rabbits (*Clinical Science*, December, 1942). It has been observed that human limbs which have been trapped in debris or otherwise compressed for long periods, may, on release, develop a massive edema. The events are frequently complicated by local trauma and vascular damage in the limb or by general disturbances, but the following case, on which measurements were made, illustrates edema following compression without shock or local wounds. A woman, aged twenty-eight years, was trapped in debris and her right leg was uniformly compressed below the knee for ten hours. The left leg was at first similarly compressed, but was freed after a few hours. An hour after release, the right leg was flushed and somewhat swollen, but the skin was undamaged except for slight grazing. The left leg appeared normal. The right leg continued to swell for twenty-four hours, when it exceeded the left in volume by 270 cubic centimetres (13%) between knee and ankle, and the edema pitted on pressure. The difference between the legs then decreased, and was slight after three weeks, although both legs were now reduced in volume by wasting. In the author's experiments the rabbit ear was smoothed over a wooden disk, and

a band of rubber one centimetre wide, its ends attached to the disk under some tension, was applied over the base of the ear. The rabbit did not appear upset and returned to its food. After a few hours the ear was found to be warm and swollen and the veins distended. After release of the band the extent of edema formation was measured by placing two flat brass disks one centimetre in diameter on either surface of the ear and determining the thickness of the ear by calipers. The protein content of the tissue fluid was also determined by Nessler's method. On release of the circulation after a prolonged occlusion, the distal arteries and veins of the ear immediately fill with blood and become widely dilated. This condition may persist for ten days. Edema begins to develop as soon as the circulation is released. After two hours' occlusion the thickness of the ear may have increased up to 120% of its initial value. The swelling lasts for a few hours and then subsides. After six hours' occlusion the ear is swollen to 150% of its initial thickness and returns to normal in a few days. After 18 hours' occlusion massive edema develops, the ear increasing 300% to 600% of its initial thickness. The rate of swelling is at first rapid, the thickness being doubled in thirty minutes, and in two hours reaches its greatest amount. Several weeks are required for the return to normal. The consequences of circulatory occlusion depend not only on the duration of occlusion, but on the temperature of the ear during the period. When the experiments were carried out in a room of temperature 88° F. gangrene was the usual sequel, although the edema was no greater than that produced at lower temperature. The protein concentration of the edema fluid is initially about 5%, but falls progressively.

Swelling of the Human Limbs in Response to Immersion in Cold Water.

THOMAS LEWIS (*Clinical Science*, December, 1942) describes some experiments made after noting the effect on his hands of weeding a chalk stream for some hours with a water temperature of 12° C. He states that when an extremity is cooled, as by immersion in cold water (5° C.), it swells. This increase of volume occurs in both skin and subcutaneous tissue, and may amount within three hours to as much as 15% of the original volume. The swelling is due mainly to an edema of the tissues, judged to be inflammatory from its relatively rapid outpouring and from its relatively high protein content. The contribution in the form of imbibed water is very slight. Figures are given for the amount of water imbibed by the skin at various temperatures. It would seem that cold directly injures the skin and subcutaneous tissues. This effect begins at about 15° to 18° C. and increases as the scale of temperature is descended.

Drug Prophylaxis Against Severe Anoxia.

G. A. EMERSON AND E. J. VAN LIERE (*The Journal of Laboratory and Clinical Medicine*, March, 1943) describe in the fourth paper of a series their standard technique of producing anoxic anoxia and discuss the influence on anoxic mice of body weight, injection of saline solution, muscular

restraint, rate of ascent, and pre-treatment with oxygen or helium oxygen. The function of this simple test is one of preliminary orientation, to obtain a measure of relative efficacies of different agents in combating the lethal effects of anoxia. For reasons discussed, the results cannot be considered applicable to therapy in man without further investigation. In the fifth paper of the series the authors report that forty-one agents which act on the autonomic system or which are closely related to drugs which do so, were tested with small groups of mice subjected to anoxic anoxia. They state that certain cholinergic and sympatheticolytic agents have significant prophylactic actions against lethal effects of anoxic anoxia in mice, while adrenergic and parasympatholytic agents tend to increase the lethal effects. Other classes of autonomic drugs are without appreciable effect. Differences in the therapeutic and prophylactic efficacies of individual agents are discussed.

BIOLOGICAL CHEMISTRY.

Plasma Protein.

TEN amino acids essential for plasma protein production effective orally or intravenously have been investigated by S. C. Madden *et alii* (*The Journal of Experimental Medicine*, March, 1943). When blood plasma proteins are depleted by bleeding with return of the washed red cells (plasmapheresis) it is possible to bring dogs to a steady state of hypoproteinæmia and a constant level of plasma protein production if the diet protein intake is controlled and limited. Such dogs are outwardly normal, but have a lowered resistance to infection and to certain intoxications. When the protein intake of such dogs is completely replaced by the growth mixture (Rose) of crystalline amino acids, plasma protein production is excellent and weight and nitrogen balance are maintained. The growth mixture consists of ten amino acids, threonine, valine, leucine, iso-leucine, tryptophane, lysine, phenylalanine, methionine, histidine and arginine, and is as effective as most diet proteins in plasma protein production. The findings indicate that the growth mixture of amino acids should be a valuable addition to transfusion and infusion therapy in disease states associated with deficient nitrogen intake or tissue injury and accelerated nitrogen loss, including shock, burns and major operative procedures.

Unsaturated Fatty Acids.

P. GYÖRGY, R. TOMARELLI, R. OSTERGAARD AND J. BROWN (*The Journal of Experimental Medicine*, November, 1942) have found that crude linoleic acid incorporated with or without butter yellow (*N,N*-dimethylamino-azobenzene) in a synthetic diet proved to be toxic for rats. The toxic effect manifested itself in a loss of weight and progressive anemia of the secondary type. It could be neutralized preventively and therapeutically by administration of yeast. The toxicity of the diet containing linoleic acid appears to be due to oxidative breakdown products of the unsaturated fatty acid. The colour of the same diet when it contained crude linoleic acid supplemented with butter

yellow faded progressively in the presence of air (O_2) even at room temperature. Purified preparations of linoleic acid and, to a less degree, purified preparations of arachidonic and oleic acids have shown the same destructive effect on butter yellow *in vitro*. Brown (unpolished) or white rice contains a stabilizer (anti-oxidant) for the preservation of butter yellow. In experiments on the production of hepatoma in rats following the ingestion of butter yellow, rice on one hand and butter fat on the other hand have proved to be procarcinogenic. These results would seem to be correlated with the preservation of butter yellow in the diet and in the intestine, because of the anti-oxidant in rice and the low supply of unsaturated fatty acids respectively.

Paraffin Metabolism.

THE metabolism of a paraffin has been studied by D. Stetten (*The Journal of Biological Chemistry*, February, 1943). He has prepared n-hexadecane containing an excess of deuterium and has fed this material to rats for a period of nine days. At the level of feeding employed, 83 milligrams per rat per day, hexadecane is very efficiently absorbed from the gastro-intestinal tract and partially deposited as such in the tissue lipids. Much of the absorbed hexadecane was found to have been oxidized to fatty acid in the body, apparently largely in the liver.

Hypoprothrombinæmia.

HYPOPROTHROMBINÆMIA induced by salicylic acid has been studied by K. Link and R. Overman (*The Journal of Biological Chemistry*, February, 1943). It has been shown that single doses of salicylic acid induce a temporary hypoprothrombinæmia in rats when the rats are maintained on a ration low in vitamin K. The salicylic acid hypoprothrombinæmia does not develop when rats are maintained on a diet containing vitamin K. The synthetic quinone (2-methyl-1, 4-naphthoquinone or the water soluble sulphonate) protects the rat against the hypoprothrombinæmia-inducing action of salicylic acid. The parallelism between the hypoprothrombinæmia and the hemorrhages induced by 3, 3'-methylenebis (4-hydroxycoumarin), the causative agent of the hemorrhagic sweet clover disease, and salicylic acid is indicated. The bearing of these findings on some of the long-standing contraindications reported in the therapeutic use of salicylates in medicine (hemorrhage) is discussed.

Zinc.

THE excretion of administered zinc in urine and faeces has been investigated by G. Sheline and I. L. Chaikoff (*The Journal of Biological Chemistry*, February, 1943). Radio-zinc was injected intravenously. The use of the radio-active isotope permitted the injection of minute amounts of zinc, amounts that were negligible when compared with the total amounts of zinc already contained in the animal. A large fraction of the Zn^{65} appeared in faeces. In the mouse, as much as 50% was eliminated by way of the gastro-intestinal tract in 170 hours. In the dog, about 25% was found in the faeces at the end of twelve to fourteen days. Labelled zinc appeared early in the urine of both mice and dogs and continued to be excreted throughout the

periods of observation, namely, 170 hours in the case of the mice and 15 days in the case of the dogs. The amounts of Zn^{65} eliminated by this route were small, compared with those by way of the faeces. A total of 2% of the administered radio-zinc was found in the urine of the mouse at the end of 170 hours. In 15 days the dog eliminated 1.2% to 4.7% of the injected Zn^{65} in the urine. The results are interpreted to mean that a large fraction of the body zinc is eliminated by way of the gastro-intestinal tract.

Metabolism of the Central Nervous System.

E. RACKER AND H. KARAT (*The Journal of Experimental Medicine*, December, 1942) find that during paralysis, the brain of the mouse infected with poliomyelitis virus shows on test after mincing a decrease in anaerobic glycolysis with no significant change in oxygen utilization. The decrease in anaerobic glycolysis varies from 5% to 50%. Sodium fluoride produces a greater inhibition of anaerobic glycolysis in normal than in poliomyelitic brain. Dehydrogenase activity is higher for poliomyelitis-infected brain without added substrate. The difference from normal disappears when substrates are added. The ratio of anaerobic glycolysis

oxygen utilization for the sliced motor cortex is higher than for sliced visual cortex of the dog and cat. The oxygen consumption of the anterior horn of the sliced spinal cord of dog and cat is much less than that of the cerebral cortex. The findings are in keeping with the view that, at a certain stage of the infection, the nerve cells may be reversibly injured but not yet destroyed by the virus.

Metabolism of Iodine.

M. MORRON, I. L. CHAIKOFF *et alii* have reported on the formation of thyroxine and di-iodo-tyrosine by the animal completely deprived of its thyroid gland (*The Journal of Biological Chemistry*, March, 1943). The conversion of iodide to di-iodo-tyrosine and thyroxine was measured in rats whose oxygen consumptions had been reduced considerably by excision of all visible thyroid tissue. As early as 96 hours after its injection, 30% of radio-iodine contained in the liver and in the small intestine was organically bound, 20% as di-iodo-tyrosine and as much as 8% as thyroxine. The presence of newly formed radio-di-iodo-tyrosine and radio-thyroxine was established in rats that had been deprived of their thyroid glands for several months by demonstrating a constant radio-activity per unit of crystalline material obtained during several recrystallizations of (a) a mixture of the thyroxine-like fraction of the tissues and inert crystalline thyroxine and (b) a mixture of the di-iodo-tyrosine-like fraction of the tissues and inert crystalline di-iodo-tyrosine. The conversion of iodide to thyroxine and di-iodo-tyrosine was demonstrated in rats shown to be completely deprived of all thyroid tissue by (a) histological examination of all serial sections of all tissues from the base of the tongue to and including the trachea, oesophagus, thymus, heart, pericardium and associated great vessels, and (b) the absence of iodine-concentrating tissues in the neck and mediastinal regions as measured by radio-autographic procedures.

Medical Societies.

THE MEDICAL SCIENCES CLUB OF SOUTH AUSTRALIA.

A MEETING of the Medical Sciences Club of South Australia was held at the Institute of Medical and Veterinary Science, Adelaide, on October 2, 1942.

The Sulphonamides.

Dr. R. Francis Matters presented a paper on the sulphonamides. He referred to the bacteriological effect of these drugs and showed that they do not actually destroy the invading organisms, and therefore natural defences must be maintained so that phagocytes may finish the work begun by the sulphonamides.

Dr. Matters mentioned the five groups: sulphanilamide, sulphapyridine, sulphathiazole, sulphaguanidine and sulphadiazine. He said that the high concentration of sulphapyridine which could be maintained was very effective in diplococcal infections, but crystallization in the kidneys or renal pelvis was not without its risks as was shown in two cases. The acknowledged value of sulphaguanidine in dysentery was mentioned, and also the possible effect of sulphadiazine on gas gangrene was mentioned as most useful in war conditions.

The Use of Sulphanilamide in Ophthalmology.

Dr. T. L. McLarty gave a paper on the use of sulphanilamide in ophthalmology. He described its use by oral administration and by local application, in the latter case by means of a soluble form of the drug. He emphasized the significance of this comparatively new line of therapeutics in the treatment of trachoma and *ophthalmia neonatorum*, two diseases of great economic and social importance.

A meeting of the Medical Sciences Club of South Australia was held at the Institute of Medical and Veterinary Science, Adelaide, on November 6, 1942.

An Enzyme in Staphylococci.

Miss Phyllis Ashworth gave a short account of "A New Enzyme Occurring in Staphylococci". The work done by her concerned its occurrence in staphylococci only. The enzyme had been found in other organisms.

In a previous paper production of ammonia from urea was shown to be inversely associated with pathogenicity and pigment formation in the genus *Staphylococcus*. Ammonia productivity from arginine was next investigated.

The medium used was prepared by dissolving 0.2% peptone, 0.5% sodium chloride, and adjusting to pH 6.8. This was tubed in ten millilitre amounts and sterilized. To each tube was added under sterile conditions sufficient 10% solution of arginine previously adjusted to pH 7.0 and sterilized by filtration, to make the concentration of arginine 0.5%. Freshly isolated strains of staphylococci were inoculated in this, and in similar medium containing 0.5% urea in place of arginine. Ammonia productivity was detected by nesslerization.

Of series of fifty staphylococci investigated, eight strains produced ammonia from arginine. Of these, two strains of *Staphylococcus aureus* and three strains of *Staphylococcus albus* produced ammonia from arginine and to a lesser degree from urea. Three strains of *Staphylococcus aureus* produced ammonia from arginine only. This reaction was therefore not that of arginase followed by urease.

Hills, working indirectly on the same problem, with stock cultures whose enzyme activity had been trained, had found that Gram-positive cocci and *Bacterium typhosum* produced ammonia from arginine. Streptococci used were shown to possess no urease, but two strains of *Staphylococcus aureus* selected contained urease, the activity of which was less than the rate of the attack on arginine. Hills concluded that the decomposition of arginine by Gram-positive cocci was due to a distinct enzyme related to, but not identical with, arginase. He described this as "an arginase" and suggested calling it "arginine dihydrolase". Hills considered the possible function of arginine dihydrolase in the life of the organism, especially in relation to pathogenicity, merited further study.

These investigations, made independently at approximately the same time, presented confirmatory findings.

Medical Practice.

MEDICAL CERTIFICATION.

THE following letter on medical certification, written by Dr. E. W. Sutcliffe to the Medical Secretary of the Victorian Branch of the British Medical Association, is published at the request of the Medical Secretary.

[COPY.]

The Secretary,
British Medical Association, Victoria,
426, Albert Street,
East Melbourne.

Dear Sir,

A circular letter dated 31st March has been received from the Director-General, Emergency Medical Service, re medical certificates.

I am sure the letter will be most helpful to general practitioners, especially in reference to dealing with members of the armed forces.

But I, and others of my profession with whom I have spoken about this letter, are greatly disturbed at the reference to the fact that some authorities are discounting certificates given by civil practitioners.

Now I must say that only men in practice are in the position to realize the difficulties encountered when issuing certificates in industrial cases, especially the mental strain and loss of time involved in dealing with them.

I feel that there are two main contributing causes:

1. People are accepted to do work without due consideration being given to their age, hours expected to work according to age, time taken in travelling to work, home conditions, duration of time on night work without a change, and length of time since a holiday was given.

2. When a worker doubts his fitness for the work he is on or desires a transfer to another job or occupation or wants a holiday and mentions this to his manager or foreman, he is frequently told "That will be alright if you obtain a doctor's certificate".

Therein lies our difficulty. These patients are often found to have no organic or physical disability, but it is now a well-recognized fact in medicine, especially amongst psychiatrists, that the history is more important than the physical examination, so that a certificate may be given on the history even when nothing is found on examination; for instance, in the case of women in or past the menopausal age who have to do their house-work before and after work, work fairly long hours at a job they are not accustomed to, and, probably, as in one case of mine, have to travel several miles to work—this patient had to get up at 5.30 a.m., get her own and her father's breakfast and travel from Northcote to Maribyrnong to be on time.

As a partial solution of the above difficulties, I would suggest the following:

1. That managers and foremen be asked not to refer to us cases that are not medical—not to place the responsibility on us.

2. That all practitioners be advised to issue certificates to cases suggesting industrial fatigue or allied complaints on the following lines:

The Manager,

Dear Sir,

Mr. has consulted me today complaining of the following symptoms:

I can find no evidence of present disease, but as the symptoms suggest that he is suffering from industrial fatigue, I would recommend that his conditions of work, including hours, travelling time, home conditions and length of time since last holiday, be investigated, so that in fairness to all parties concerned the case be given sympathetic consideration.

Yours faithfully,

Trusting that my suggestions may be of some help.

Yours faithfully,

E. W. SUTCLIFFE, M.B., B.S.

181, Moreland Road,

Coburg,

Victoria, N.13.

April 17, 1943.

Correspondence.

HOOKWORM DISEASE.

SIR: In your timely leading article of June 5 on the possible importance of hookworm disease in general practice, when the men of our army return to civil life, there are one or two points which I think might be advantageously amplified.

You say "... that the patient complains of indefinitely, rather vague symptoms of discomfort in the epigastrum ..." This is quite true in the case of natives in an endemic area, where they have probably harboured a certain number of hookworms for most of their lives, but in Europeans, who have recently acquired the infection, it has been my experience that they usually complain of more definite symptoms suggesting duodenitis or even duodenal ulcer. In this connexion it is of interest to consider the possible aetiological connexion between hookworm infection and duodenal ulcer, because the majority of the worms congregate in the upper part of the small intestine and each one makes at least one small breach in the continuity of the mucous membrane, at its point of attachment, thus providing a focal point for the development of an ulcer.

A further source of confusion with ulcer is the point to which you draw attention, namely, that the worms are constantly sucking blood. The dog hookworm (*Ankylostoma caninum*) has been observed in action attached to the gut wall of a living dog, and it is described as continually sucking in blood at the mouth and expelling it at the anus, like a miniature pump. Following this observation it has now become recognized that hookworm anaemia is essentially caused by the constant drain of blood, and not by a haemolytic or other toxin produced by the worms, so it is exactly the same type of anaemia as that derived from a slowly bleeding duodenal ulcer. As would be expected, the stools of a hookworm carrier give positive tests for occult blood, just as do those of an ulcer patient.

These facts provide further emphasis for the importance of making an exact diagnosis by finding the eggs in the stools.

Yours, etc.,

PHILIP A. MAPLESTONE,
Late Helminthological Research
Worker, School of Tropical
Medicine, Calcutta.

Lachlan Park Hospital,
New Norfolk,
Tasmania.

June 8, 1943.

THE TREATMENT OF ANGINA PECTORIS BY TESTOSTERONE PROPIONATE.

SIR: Your issue of June 12, 1943, contains a letter from Dr. Leon Opit, of Adelaide, pertaining to the recent use of testosterone in the treatment of *angina pectoris*. Recent reports of this treatment seem to confirm earlier clinical findings.⁽¹⁾ Maurice A. Lesser⁽²⁾ gives an account of forty-six patients successfully treated with testosterone. He administered the drug every second to fifth day in twenty-five milligramme doses for a total of five to twenty-five injections, with an average of eleven injections. The number of injections and the time interval required to produce relief varied considerably and the author stressed the need for individualizing each case. The good effects, that is, the partial or complete relief of effort pain, persisted for from two to eighteen months. Of the first series of twenty-four patients treated, three required a second course and one a third.

At present the treatment seems to be more or less empirical. Among other effects the action of testosterone is to cause a definite retention of nitrogen and phosphorus and an increased excretion of creatine. This is taken to be an indication of a generalized increase in musculature, which may include the myocardium. Other studies show that after testosterone administration there is a decreased excitability and an increased velocity of blood flow in the vessels. One may attempt to correlate these findings with the reported symptomatic relief in *angina pectoris*. It would be expected that increased muscle metabolism would result in further relative anoxia of the myocardium and so increase the angina. It may be, however, that in a dual action the physiological effect on the cardiac vasculature may

sufficiently outweigh that on myocardial metabolism to prevent pain by means of an enhanced coronary flow.

As regards the information sought by Dr. Opit, I have to report that a few patients in whom a diagnosis of *angina pectoris* has been established have been started on treatment with testosterone propionate at the Royal North Shore Hospital. The plan of treatment is twenty-five milligrammes of testosterone propionate in oil given by intramuscular injection every fifth day for twenty-five injections or until relief from attacks and exercise tolerance (as assessed by the two-step test of Master and Oppenheimer) have reached their maximum. Thereafter it is intended to give a maintenance dose of ten milligrammes thrice per week of methyl testosterone by mouth. It is hoped that this maintenance therapy will maintain any improvement and obviate the necessity for subsequent courses of injections. The preparation used for injection is "Testoviron" (Schering). The evaluation of results in this series of cases will have to be awaited for twelve months or more.

As regards possible deleterious effects, warnings have been sounded against the indiscriminate use of testosterone in normal man. Decreases in number of spermatozoa and in the ejaculation volume and the occurrence of gynaecomastia have been observed in the male. In females the appearance of hirsutism, deepening of the voice, hypertrophy of the clitoris, acne, weight gain and increased libido are untoward effects. It is said (Aub⁽³⁾) that though other effects quickly abate on cessation of treatment, the change in voice remains and hirsutism occasionally does so. The synthetic androgens are comparatively new and have had only a limited clinical trial.

Yours, etc.,

BRUCE T. SHALLARD.

141, Macquarie Street,
Sydney,
June 14, 1943.

References.

(1) M. A. Lesser: "The Treatment of Angina Pectoris with Testosterone Propionate: Preliminary Report", *The New England Journal of Medicine*, Volume CCXXVI, 1942, page 51.
(2) M. A. Lesser: "The Treatment of Angina Pectoris with Testosterone Propionate: Further Observations", *The New England Journal of Medicine*, Volume CCXXVIII, 1943, page 185.
(3) J. C. Aub: "Recent Advances in Testosterone Therapy", *The New England Journal of Medicine*, Volume CCXXVIII, 1943, page 338.

A CASE OF FETAL ASCITES.

SIR: In the issue of June 12 J. W. Clayton and R. M. Ford record a case of "ascites of unknown origin".

Although the description is rather brief, it seems pretty certain that the case has been one of congenital hydrops, the most severe manifestation of *erythroblastosis foetalis*.

A microscopic examination of placenta and fetal organs which would have revealed the condition has apparently not been possible, but the diagnosis could still be verified by investigating the presence of the Rh factor in the blood of the woman who gave birth to this fetus and her husband. If her blood were found to be Rh negative and the husband's blood Rh positive the diagnosis would be practically certain.

Apart from the theoretical interest, the investigation would be of clinical significance with regard to the prognosis of further pregnancies.

Yours, etc.,

H. F. BETTINGER.

Department of Pathology,
Women's Hospital,
Melbourne.
June 17, 1943.

SIR: The interesting case of fetal ascites recorded by Dr. Clayton and Dr. Munro Ford, of Adelaide, in the journal of June 12, 1943, is very suggestive of the condition of *hydrops foetalis* (the oedematous form of *erythroblastosis foetalis*).

In view of the recent work on this subject in connexion with the Rh factor, it would be of extreme clinical interest if both the patient and her husband could be investigated with regard to the grouping and the Rh factor of their respective bloods.

Yours, etc.,

ROBERT SOUTHBY.

33, Collins Street,
Melbourne,
June 18, 1943.

"GIVE US THIS DAY OUR DAILY BREAD."

SIR: Children mumble the Lord's Prayer do not appreciate that through the ages each generation looked to its daily bread for health and energy. It did not look in vain. For this generation flour "has suffered a sea change" and has lost the germ, pericarp salts and vitamins. It still provides energy, but much of its health value has gone.

During more peaceful phases of the human cycle, we, as a profession, may have had justification in condoning the impoverished loaf; it was possible for most families to spread their food purchases over an adequate field. But are we guiltless if we continue to condone?

The rationing of some essential foodstuffs, the dearth of others, and the fabulous price of fruit and vegetables force most homes with children to fall back predominantly onto wheat flour. The pangs of hunger may be allayed, but is the nutritional value adequate?

It is too much to hope that the miller will voluntarily adopt the recent advance in milling, by which the pericarp and germ are gristed with the flour, but could we insist on an Australian national loaf? I would humbly suggest that adding the B complex, iron, phosphorus and calcium, would be a practical means of restoring "our daily bread" to its ancient dignity—"The Staff of Life".

Yours, etc.,

143, Macquarie Street,
Sydney,

June 18, 1943.

F. S. HANSMAN.

AN UNUSUAL DEATH.

SIR: I would like to describe a most unusual death. The man went into a river for a swim and was found on the bank dead. The ambulance bearer who was summoned started artificial respiration. On examination of the mouth something was seen which on further examination proved to be a fish. The fish was firmly lodged and attempts at removing it only removed the tail.

A tracheotomy was performed and artificial respiration was continued without any response.

At post-mortem examination I found a bream about five inches long in the pharynx with its head firmly fixed in the larynx and completely occluding it.

Unfortunately there were no witnesses to observe this extraordinary accident.

Yours, etc.,

IAN G. MCPHEE.

Babinda,
North Queensland,
June 18, 1943.

REHABILITATION AFTER THE WAR.

SIR: May I be permitted to congratulate you on the editorial entitled "Rehabilitation after the War", dated June 19, 1943. It is to be hoped that the topic will receive the attention which it deserves. Actually the caption might have been altered to "Now and after the War". The problems are already arising. Furthermore, the term "after the war" is misleading. It suggests a hair line between peace and war. Actually the war is ending now for many and peace merely means the cessation of active military interference. Such considerations create additional reasons for a plea: "More Planning for Rehabilitation Now."

Particularly opportune is your insistence on specialized medical personnel. Those in charge must combine knowledge with tact, leadership, and the capacity for hard work over long hours. So important is this work the rehabilitation should have manpower priority. Payment must be on a scale sufficient to attract and hold men of outstanding merit. That only the best is good enough, is particularly true for this type of activity.

It is pleasing to note the implied existence of a general trend towards more planned cooperation between civilians and governmental departments. In the past this has been far too haphazard. Regular conferences between all interested parties throughout the Commonwealth would go far towards solving the problem of rehabilitation by spreading greater knowledge of relevant data. The education services, by becoming active participants in such proceedings, would find a valuable avenue for their work. Surely the best education occurs from "rubbing shoulders with the other fellow's problems".

Our future in general and rehabilitation in particular depends on our ability to find a common basis for

cooperation between all sections of the community. A regular meeting place, a conference, a round table, a convention, call it what you will, would seem an essential preliminary.

Yours, etc.,

Brisbane Clinic,
Wickham Terrace,
Brisbane.

June 21, 1943.

JOHN BOSTOCK.

THE PARTIALLY SIGHTED AND WAR WORK.

SIR: The war has produced a remarkable problem (amongst many). People in the Royal Victorian Institute for the Blind are thoroughly examined before admission. They comprise the totally blind and the partially sighted, the English standards being adopted with slight modification.

Those who cannot count fingers at one to two metres in any circumstances are classified as "totally blind". The English standard fixes $\frac{1}{20}$ as the upper limit for the partially sighted, with consideration for many ocular conditions. In Victoria the standard is more liberal, rising to $\frac{1}{10}$, and even higher in special circumstances such as *retinitis pigmentosa* and contracted fields. They are all pensionable.

The war has come and about 35 have voluntarily left the institution and are engaged in various munition factories where the employers report favourably of their work. Of course, many have been well trained and handle machinery *et cetera* in that excellent institution.

During the last war the British Army enlisted men with $\frac{1}{20}$ in one eye, there being, of course, no disease, and were useful for certain purposes.

But the present development repeats the lessons I learnt in Egypt and Palestine. The physical disability is not the sole factor which is really what the man is willing to do. I reported one remarkable instance in my work "A Vision of the Possible" and saw many others.

I have one patient with vision of $\frac{1}{20}$ in each eye who has managed a farm successfully for years. Any woman with such vision could be well trained for domestic work.

What will happen after the war when other men want their work is a problem of the first order.

It so happens that some of these blind workers are being better paid (with their pensions) than the men working alongside them who have normal vision. They would probably not have been employed but for the scarcity of labour, but that fact may not appeal to them, and they may and probably will take the view that as they helped their country in time of need they must be allowed to continue if they wish. They will regard it as their war work and it will be difficult indeed to take any other view.

Yours, etc.,

JAMES W. BARRETT.

103-105, Collins Street,
Melbourne,
June 21, 1943.

THE PROPHYLAXIS OF ACUTE RECURRENT RHEUMATISM: A NOTABLE ADVANCE.

SIR: In the May 8, 1943, edition of your journal is a paper on "The Prophylaxis of Acute Rheumatism: A Notable Advance". There are certain points in this paper which are not clear. Cases are recorded where streptococci have been isolated from throats and sulphanilamide given subsequently with the view to stop recurrence of acute rheumatic disease as well as cardiac involvement, but it does not tell us if any of those patients had had any focus of infection removed or attended to. This is a very vital and important point. Organisms breeding in a focal infection are potentially outside the body in so far as none of the defence forces of the body can attack them; likewise no drug administered internally can affect them. Streptococci which are causing progressive diseases such as cardiac disease and arthritis do not live within the blood stream, but gain entrance daily. If there is no focus for them to multiply in there is likewise no possibility of them gaining an entrance to do harm, so if sulphanilamide is beneficial at all in preventing recurrence, it does so by acting on those organisms which are gaining entrance. Once a focus is properly removed there is no possibility of further invasion, hence no need for the use of such a drug, so one has to decide upon one of two lines of treatment, either to leave the focus and destroy the organisms as they enter with sulphanilamide or to depend on the natural defence forces

of the body to deal with the organisms, or on the other hand remove the focus and have done with it forever, because we do know that organisms have no other portal of entry except through these foci.

All foci act alike, that is, they are portals of entry for organisms. It does not matter if it is root abscess, pyorrhoea, sinus or tonsil. Nobody thinks of leaving a root abscess at the present time, so why leave an infected tonsil? I fail to see how these statistics can be of any value unless such foci harbouring streptococci are first eliminated. Pyorrhoea causes more heart lesions in adults than any other factor; root abscesses also play a large part. I think anyone would consider it a poor line of treatment to leave these foci and use sulphanilamide in the hope of preventing further trouble; the organisms entering the blood stream may be destroyed, but the treatment will not prevent fresh ones from still coming in. Why not put infected tonsils in the same category as root abscesses and pyorrhoea and deal with them in the same way? It may be argued that a virus may possibly be the inciting agent by itself or in symbiosis with a streptococcus. Even then there has to be some portal of entry, and infected surfaces are more easily penetrable than healthy ones. Again one may say even if the tonsils are removed there is still a good deal of lymphoid tissue about the pharynx to carry infection. One occasionally sees the pharynx bright red with infection all over and extending into the larynx. These conditions always subside when tonsils, perhaps of small dimensions, are removed. Statistics in relation to acute rheumatism and heart disease, with foci of infection still remaining in the mouth or pharynx, are valueless. They do become of great value when all such foci have been removed or adequately dealt with. If such are left cardiac troubles of a progressive nature must occur. Then it becomes a question of sulphanilamide for the rest of one's life, for as soon as it is stopped the organisms will start to do damage again, or removal of the focus and have done with the trouble forever.

Yours, etc.,

SYDNEY PERN.

Ballarat,
Victoria,
June 21, 1943.

THE NATIONAL HEALTH AND MEDICAL RESEARCH COUNCIL.

SIR: Dr. Cumpston is to be thanked for his lucid explanation of the constitution and powers of the National Health and Medical Research Council and for his version of the events subsequent to the *National Insurance Act* of 1938. In effect, it is an advancement of the claim that we should thank the National Health and Medical Research Council for the delay that has ensued and should bend our efforts to the discussion of its report on a national medical service.

Another view is at variance with his, and falls into three main points:

1. The details of the medical contract were not acceptable to the profession, and consequently a royal commission was set up to work out the details of a contract that would be acceptable.

2. The tragic circumstances surrounding the royal commission were such as to prevent a report being presented at all.

3. The general belief that the Act was *ultra vires* the Australian Constitution.

It is to the last point that Dr. Cumpston may be of great assistance.

We should be assured that any plan proposed by government or governmental body is constitutional. Assuming that the Solicitor-General has given such advice, would it be asking too much for that opinion to be given to our Federal Council so that our legal advisors may be consulted? Remember that our last experience cost us £20,000 and the Federal Government did not refund us one penny for its little item of electioneering window dressing.

We understand that there are to be conferences in Canberra between the profession and governmental bodies to arrive at a plan. Naturally, there would have to be British Medical Association State conferences, conventions and interstate meetings to be followed by further parleys between our Federal Council and the Government. That this is no fantastic idea is proved by the fact that others have been summoned to Canberra to discuss with the Government matters related to a social security scheme, and have incurred heavy expense already, in addition to the dislocation of their affairs.

I must confess to considerable uneasiness about the constitutionality of all the Federal incursions into the realm of

private practice, and am less assured by the recent upsetting decisions of the High Court in other matters. No doubt this matter will be cleared up by the Federal Council, but, as Dr. Cumpston has told us so much, would he tell the profession just a little bit more?

Yours, etc.,
D. ROSEBY.

Church Street,
Richmond,
Victoria.
June 23, 1943.

Naval, Military and Air Force.

APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Number 143, of July 1, 1943.

NAVAL FORCES OF THE COMMONWEALTH. Permanent Naval Forces of the Commonwealth (Sea-Going Forces).

Appointment.—Edwin Alan Mobbs is appointed Temporary Surgeon Lieutenant (D), dated 18th May, 1943.

Fizing Rates of Pay.—Surgeon Lieutenant Charles Patrick Cummerford Reilly to be paid the rates of pay and allowances prescribed in the Naval Financial Regulations for Surgeon Lieutenant-Commander (on promotion) whilst acting in that rank, dated 20th April, 1943.

Extension of Appointment.—The appointment of Surgeon Lieutenant (for Short Service) Athol Herbert Robinson is extended for a period of two years from 27th March, 1943.

Citizen Naval Forces of the Commonwealth. Royal Australian Naval Reserve.

Promotion.—Surgeon Lieutenant William Hugh Milroy is promoted to the rank of Surgeon Lieutenant-Commander, dated 16th May, 1943.

ROYAL AUSTRALIAN AIR FORCE. Citizen Air Force: Medical Branch.

The following Flight Lieutenants are granted the acting rank of Squadron Leader whilst occupying Squadron Leader posts with effect from 1st May, 1943: D. O. Longmuir (253239), E. A. Eddy (255903).

The probationary appointment of Flight Lieutenant G. G. Henn (294573) is confirmed.—(Ex. Min. No. 174—Approved 29th June, 1943.)

The following Flight Lieutenants are transferred from the Reserve with effect from the dates indicated: L. C. G. Colville (256713), 26th April, 1943; G. J. B. Phillips (267374), T. J. Lowe (266786), J. A. Eddy (266715), J. T. Cullen (267165), I. M. Lilley (267076), N. G. Dobell-Brown (267113), I. C. Morrison (266409), H. S. Moore (266931), G. R. Watson (266788), A. I. Lane (266930), J. B. Maloney (267436), A. K. Smith (267110), F. J. McCoy (253474), H. S. Moroney (254365), A. L. Hare (254419), 17th May, 1943.

William John Stevenson, L.R.C.P. & S. (Edin.) (257483), is appointed to a commission on probation with the rank of Flight Lieutenant with effect from 18th May, 1943.

Reserve: Medical Branch.

The following are appointed to commissions on probation with the rank of Flight Lieutenant with effect from the dates indicated: Charles Stirling Harper, M.B., B.S. (297386), Graeme Neil Barsden, M.B., B.S. (297387), 14th January, 1943; Anthony John Tonakie, M.B., B.S. (277429), 10th May, 1943; William Bruce Stafford, M.B., B.S. (257510), Alfred Bardsley, M.B., B.S. (257498), George Danford Charters, M.B., B.S. (257499), John Herbert Cloke, M.B., B.S. (257500), George Pentland Cromie, M.B., B.S. (257501), Ronald Tregaskis Davies, M.B., B.S. (257502), Maurice James Etheridge, M.B., B.S. (257503), Kenneth George Howsam, M.B., B.S. (257504), Horace Haydon Martin, M.B., B.S. (257505), William Gregor MacGregor, M.B., B.S. (257506), Ian Howard Ogilvy, M.B., B.S. (257507), Maurice Isidore Symonds, M.B., B.S. (257508), 22nd May, 1943.—(Ex. Min. No. 181—Approved 29th June, 1943.)

CASUALTIES.

ACCORDING to the casualty list received on July 1, 1943, Captain W. R. Phillips, A.A.M.C., Wallaroo, South Australia, has been placed on the seriously ill list.

Australian Medical Board Proceedings.

QUEENSLAND.

THE undermentioned has been registered, pursuant to *The Medical Acts*, 1939-1940, of Queensland, as specialist in psychiatry:

Henderson, John Hector Baillie, Mental Hospital, Toowoomba.

The undermentioned has been registered, pursuant to *The Medical Acts*, 1939-1940, of Queensland, as specialist in pediatrics:

Arden, Felix Wilfrid, Hospital for Sick Children, Brisbane.

The undermentioned have been registered, pursuant to the provisions of *The Medical Acts*, 1939-1940, of Queensland, as duly qualified medical practitioners:

Edmonds, Archibald Roy, M.B., B.S., 1942 (Univ. Melbourne), c/o Dr. Pitt, 566, Logan Road, Greenslopes.

Sweetman, Keith Franklin Drysdale, M.B., B.S., 1937 (Univ. Melbourne), Royal Australian Air Force.

Crosse, Walter Henry Burnham, M.B., B.S., 1943 (Univ. Queensland), "Craigston", Wickham Terrace, Brisbane.

Dines, Charles Reginald, M.B., B.S., 1943 (Univ. Queensland), Box 49, Post Office, Toowoomba.

Gallagher, Michael Joseph, junior, M.B., B.S., 1943 (Univ. Queensland), Mater Public Hospital, South Brisbane.

Harrison, Andrew, M.B., B.S., 1943 (Univ. Queensland), 85, Chester Road, Anerley, S.3.

Henderson, David Arthur, M.B., B.S., 1943 (Univ. Queensland), 145, Lancaster Road, Ascot.

Hemming-Jones, Douglas, M.B., B.S., 1943 (Univ. Queensland), Lambert Road, Indooroopilly.

Nominations and Elections.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Carter, Lindsay Vaughan, M.B., B.S., 1942 (Univ. Sydney), 100, Greenwich Road, Greenwich.

Farrar, James Martindale, M.B., B.S., 1943 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown. Loveridge, Gordon Balfour, M.B., B.S., 1943 (Univ. Sydney), Lewisham Hospital, Lewisham.

Notice.

THE Medical Secretary of the Victorian Branch of the British Medical Association has received from Dr. D. B. Rosenthal, Medical Superintendent of Gresswell Sanatorium, Mont Park, an invitation for members of the association and their friends to attend an exhibition of handicrafts, the work of patients in vocational therapy, to be held at the sanatorium on Saturday and Sunday, July 17 and 18, 1943. Convenient visiting hours are from two to five o'clock p.m. on Saturday and Sunday, and ten o'clock a.m. till midday on Sunday. The sanatorium is about twelve miles from Melbourne and about three miles from Heidelberg North. It may be reached by road from Preston or Heidelberg. Members may also take a train to Macleod station from which there is a walk of a mile to the sanatorium; or they may take a train to Ivanhoe and an omnibus to Mont Park, which is ten minutes' walk to the sanatorium.

Medical Appointments.

Dr. Raymond Tennyson Allan, under the provisions of the *Crimes Act*, 1928, of Victoria, has been appointed a member of the Indeterminate Sentences Board of Victoria.

Dr. Frank Couper Wooster, under the provisions of *The Health Acts*, 1937 to 1941, and *The State Children Acts*, 1911 to 1928, of Queensland, has been appointed Acting Government Medical Officer, Rockhampton, Acting Health Officer for the purposes of the first-mentioned acts, and Acting Medical Officer to the State Children Department, Rockhampton.

Books Received.

"Shipwreck-Survivors: A Medical Study", by Macdonald Critchley, M.D., F.R.C.P.; 1943. London: J. and A. Churchill Limited. 7½" x 4½", pp. 135, with 11 illustrations. Price: 7s. 6d.

"Biochemistry for Medical Students", by William Veale Thorpe, M.A., Ph.D.; Third Edition; 1943. London: J. and A. Churchill Limited. 8½" x 5½", pp. 484, with 39 illustrations. Price: 16s.

Diary for the Month.

JULY 13.—New South Wales Branch, B.M.A.: Executive and Finance Committee.

JULY 13.—New South Wales Branch, B.M.A.: Organization and Science Committee.

JULY 13.—Tasmanian Branch, B.M.A.: Branch.

JULY 20.—New South Wales Branch, B.M.A.: Ethics Committee.

JULY 21.—Western Australian Branch, B.M.A.: Branch.

JULY 22.—New South Wales Branch, B.M.A.: Clinical Meeting.

JULY 23.—Queensland Branch, B.M.A.: Council.

JULY 27.—New South Wales Branch, B.M.A.: Medical Politics Committee.

JULY 28.—Victorian Branch, B.M.A.: Council.

JULY 29.—New South Wales Branch, B.M.A.: Branch.

AUG. 3.—New South Wales Branch, B.M.A.: Organization and Science Committee.

AUG. 4.—Victorian Branch, B.M.A.: Branch.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phoenix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2.)

Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility unless such a notification is received within one month.

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Further particulars may be obtained from the Registrars of the Universities of Queensland, Sydney, Melbourne and Adelaide.

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C. D. MCINTYRE,
Secretary.

THE ROYAL NORTH SHORE HOSPITAL OF SYDNEY.

Applications are invited and will be received up to noon on Saturday, 17th July, 1943, from Medical Practitioners qualified to fill the undermentioned temporary position on the Honorary Medical Staff of the Hospital:

Honorary Assistant Surgeon.

Appointment will be for the period of absence of the present holder of the position on War Service and in accordance with the By-Laws of the Hospital.

Applications should be addressed to the undersigned and must contain particulars of age, qualifications and experience.

By order.

J. H. WARD,
Secretary.

REPATRIATION COMMISSION. VACANCIES FOR MEDICAL OFFICERS.

Applications are invited for appointment to four newly created positions of Medical Officer, namely:
One position: Repatriation General Hospital, Brisbane, for duties in connection with the treatment of T.B. patients.

Two positions: Repatriation Sanatorium (Lady Davidson Hospital), Tarramurra, near Sydney.

One position: Macleod Repatriation Sanatorium, near Melbourne.

The appointments will be on probation for a period of six months and salaries are subject to cost of living adjustments. The existing salary range is:

£760 per annum—on commencing duty.

£796 per annum—second year.
£832 per annum—third year.
£868 per annum—fourth year.
£904 per annum—fifth year.

£932 per annum—sixth year (maximum).

Increments within the range are subject to satisfactory service and to the nature of the duties justifying the increases.

On confirmation of appointments, the appointees will be required to make contributions under the Superannuation Act.

Permanent quarters are not available, but when required to remain at the Institutions overnight or during week-ends, sleeping accommodation will be arranged and a charge of one shilling will be made for each meal provided.

Applicants should specify the positions for which they wish to be considered and should state whether they are married or single, their age, war service (if any), and forward copies of testimonials. Successful applicants will be required to meet the cost of transportation to the places to which they are appointed, and private practice will not be allowed.

Applications should be lodged not later than Saturday, 7th August, 1943, with the Deputy Commissioner for Repatriation in the capital city of the State in which the applicant resides.

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